



# **BRIDGING PROGRAMS FOR INTERNATIONALLY EDUCATED MEDICAL LABORATORY TECHNOLOGISTS**

## **A BUSINESS CASE**

**FINAL REPORT**

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## SUMMARY

Canadian healthcare is experiencing a growing shortage of medical laboratory technologists at the same time that internationally educated medical technologists (IEMLTs) are facing challenges entering the field. Many of their challenges arise from substantial differences in medical laboratory practice from one country to another. Addressing these differences in the interest of patient safety involves a considerable, and sometimes daunting, investment of time, energy and money for IEMLTs.

The Canadian Society for Medical Laboratory Science (CSMLS) is the national certifying body for medical laboratory technologists and medical laboratory assistants, and the national professional society for Canada's medical laboratory professionals. With the exception of Québec, regulatory bodies for medical laboratory technologists across Canada require CSMLS certification as a condition of licensure. The CSMLS conducts a prior learning assessment (PLA) process to evaluate the credentials of IEMLTs to determine if they are eligible to write the CSMLS national certification examination.

Medical laboratory science is one of only two health professions in which there is a single national access point for professional certification. This has obvious advantages for our internationally educated clients, and may be responsible for the fact that the medical laboratory profession has the highest percentage uptake of newcomers to Canada.

The CSMLS has maintained that supporting IEMLTs through a subsidized bridging program would expedite their transition into the workforce, reducing the associated stresses and financial burdens and integrating

them sooner into the workforce, where they would contribute to healthcare and the economic well-being of the country. In order to investigate this contention, the CSMLS engaged in a business case analysis of bridging programs for IEMLTs.

The findings of the analysis demonstrate clear economic advantages at both provincial and national levels for supporting the professional entry of IEMLTs through bridging programs. The economic benefits of bridging programs for IEMLTs affirm the CSMLS's advocacy efforts among policy-makers seeking federal and provincial contributions to the workforce integration of IEMLTs. These contributions can address both health human resource challenges and the need for equitable treatment of newcomer professionals to Canada.

A cohesive and integrated strategy for implementing IEMLT bridging programs requires a consultative approach and introduces systemic complications. Not the least of these is the challenge of providing Canadian clinical experience for IEMLTs in a healthcare environment that is, at best, ambivalent in its support for educating aspiring healthcare professionals. These issues merit further discussion but need not delay immediate attention to supporting both the bridging programs already in place and the IEMLTs who seek such programs to gain professional certification.

## INTRODUCTION

Medical laboratory technologists (MLTs) provide diagnostic data on blood and body tissue analyses that form the basis for up to 85 per cent of physicians' decisions about a patient's diagnosis and treatment.<sup>1</sup> This group of professionals comprises Canada's third largest health profession with over 21,000 practitioners in laboratories (hospital, private, public health, research, and blood services) across the country. Medical laboratory science is one of seven health professions targeted for health human resources and policy measures about internationally educated health professionals. MLTs were among the top ten professionals immigrating to Canada between 1996 and 2000.<sup>2</sup>

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CSMLS receives applications from over 300 IEMLTs per year for its prior learning assessment (PLA). PLA determines whether the individual's education and work experience are equivalent to Canadian standards. An 'equivalent' status is necessary for eligibility to write the certification

examination. Over 90 per cent of IEMLTs who apply to the CSMLS's PLA

**Over 90per cent of  
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process are not equivalent to the Canadian standard. CSMLS provides them with a learning plan, which consists of courses that will help them to address the gaps. Fulfilling the learning plan is costly and time-consuming for IEMLTs, and may not address the needs of newcomers for occupation specific communication,

interpersonal and Canadian workplace skills.

Many reports have provided strong cases for making full use of the skills that internationally educated workers have to offer from both economic and equity perspectives.<sup>3,4,5</sup> The CSMLS has maintained that supporting IEMLTs through a subsidized bridging program would expedite their transition into the profession, reducing the associated stresses and financial burdens and integrating them sooner into the workforce, where they would contribute to healthcare and the economic well-being of the country. In order to investigate this contention, the CSMLS engaged in a business case analysis of bridging programs for IEMLTs. In this document, we provide an overview of the project, the economic analysis, and a discussion of the implications of the study for further action.



## BACKGROUND TO THE PROJECT

There is no global curriculum for medical laboratory practice, and no consensus on what should be included. The Canadian medical laboratory curriculum has evolved to meet the country's unique needs, policies and priorities for education and healthcare. In addition, Canada is attracting newcomers from an increasingly broad range of source countries, many of which do not have educational, healthcare or cultural traditions in common with Canada.<sup>6</sup> As a result, more than 90 per cent of IEMLT applicants to the CSMLS have significant gaps in their backgrounds when compared to the Canadian standards for medical laboratory practice.<sup>7</sup> They receive a 'not equivalent' assessment as well as a learning plan to guide them through the process to meet the requirements. The percentage of 'not equivalent' PLA applicants is expected to increase when the CSMLS implements its new competency profile in 2010,<sup>8</sup> making it even more crucial that IEMLTs receive full and appropriate professional preparation for safe and competent practice.

**Bridging programs ... have been recommended as the best means to help newcomer professionals address gaps identified through professional assessment processes.**

One of the most comprehensive pathways for meeting the requirements identified through prior learning assessment is a 'bridging program' - a program specifically designed to meet the educational needs of

professionals educated in other countries. Bridging programs offer significant advantages for internationally educated professionals and, in fact, have been recommended as the best means to help newcomer

**...bridging programs [are] in the best interests of high quality laboratory services, patient safety, and of IEMLTs themselves.**

professionals address gaps identified through professional assessment processes.<sup>9</sup> Bridge training increases the likelihood that an internationally educated professional will find eventual employment in his/her intended occupation.<sup>6</sup> Participants in bridging programs report reduced

feelings of isolation, an enhanced sense of community, and increased opportunities for professional networking.<sup>10</sup> Several successful models exist for professional bridging programs both in Canada and internationally.<sup>10,11</sup>

Bridging programs offer IEMLTs exposure to the Canadian health care system and, in most cases, an opportunity to gain supervised work experience in Canada through a clinical placement at a medical laboratory site. This experience is highly valued by employers and can sometimes be the deciding factor for an employer who is considering hiring an IEMLT.<sup>12</sup> Although the numbers for IEMLT graduates of bridging programs are small as yet, completing a bridging program has been found to shorten the time required for IEMLTs to be ready to enter the workforce and may offer advantages for IEMLTs in successfully completing certification requirements.<sup>7</sup>

Three years ago, three Canadian bridging programs were available to IEMLTs:

- British Columbia Institute of Technology (BCIT), Vancouver BC
- Mohawk McMaster Institute of Health Sciences, Hamilton ON
- The Michener Institute for Applied Health Sciences, Toronto ON

The BCIT program was suspended in 2008 pending a re-design of the curriculum. The Michener program has adopted a full-cost recovery modular format (rather than a comprehensive program spanning the breadth of medical laboratory practice) and does not offer its courses on a consistent and comprehensive basis. We have recently heard of a newly opened bridging program in Manitoba with a very small class size (three to five students) but do not have any further information. In addition, the Northern Alberta Institute of Technology (NAIT) in Edmonton Alberta offered a ten-month accelerated program in 2004-5. This latter program was funded by HRSDC for one year only with the expectation that Alberta Learning would assume the financial costs for the program. The Alberta ministry chose not to do so, and the program ended after just one iteration.

**“Bridge training offers skilled immigrants the opportunity to leave the margins and enter the mainstream.”**

*SP Consulting and  
The Whetstone Group, 2008*

This means that the only bridging programs in operation for Canadian IEMLTs is in Hamilton Ontario and Winnipeg Manitoba with a combined

capacity of less than 20 students per year. Current opportunities for

**“Bridging education provides a vehicle by which foreign-trained professionals may be connected to the academic institution and the broader professional community.”**

*Austin & Dean, 2006*

entering bridging programs are insufficient to meet the needs of IEMLTs who require upgrading to meet Canadian professional standards. IEMLTs who do not have access to a bridging program must take courses (face-to-face or distance education) from various institutions; course cost and availability are serious barriers. CSMLS members have expressed doubts about the effectiveness of

distance education for IEMLTs, and support educational preparation with a clinical education component. IEMLTs have reported clear disadvantages when their preparation for the Canadian work environment does not include relevant clinical experience.<sup>7,13</sup>

In February 2009, the CSMLS convened a Task Force consisting of stakeholders in the medical laboratory profession (employers, IEMLTs, regulators, educators, and government) to deliberate options for certification of IEMLTs. Their conclusions validated current standards for entry to the medical laboratory profession and advocated for bridging programs as in the best interests of high quality laboratory services, patient safety, and of IEMLTs themselves.<sup>14</sup>

Admittedly, bridging programs are expensive to operate (as are their full-time entry-level counterparts). However, the infrastructure for

them is in place in institutions that currently offer entry-level medical laboratory science programs. There is a great deal of interest within the profession for this kind of undertaking, if it is appropriately funded. The main challenge to opening or expanding medical laboratory bridging programs is the same challenge facing the profession's entry-level programs: a lack of essential clinical placements for students. There is no point in accepting learners into a program - whether bridging or entry-level - if there is no opportunity for them to gain essential clinical skills. This is particularly vital for IEMLTs who have little or no experience in the Canadian workplace. Any business case for bridging programs *must* include support for creation of more clinical opportunities within the medical laboratory environment.

With these considerations in mind, and with financial support from the Government of Canada's Foreign Credential Recognition Program, the CSMLS undertook a business case analysis of bridging programs for IEMLTs.



## PROJECT OVERVIEW

In order to fully appreciate the costs and benefits of bridging programs for IEMLTs, the CSMLS engaged the services of an economist consultant, Robin Somerville of the Centre for Spatial Economics (C4SE), to provide an analysis of the financial and economic benefit of public funding for bridging programs for IEMLTs. The C4SE's analysis is appended to this report.

### Definition of a bridging program

There is no standard definition or list of characteristics for bridging programs; they vary widely among professions and sectors and may be referred to as laddering, top-up training or gap training.<sup>15</sup> The Canadian Information Centre for International Credentials (CICIC) defines a bridge training program as:

“... a program of study involving courses designed specifically to provide individuals with skills and knowledge required for entry into an occupation of a higher-level educational institution. It supplements learning outside a jurisdiction or at another institution and may consist of workplace training and occupation-specific skills acquisition, as well as language training.”<sup>16</sup>

For this project, our definition builds on the CICIC understanding and is guided by the deliberations of the CSMLS IEMLT Task Force mentioned

earlier. We defined a bridging program as a full-time occupation-specific educational program, hosted by an educational institution, that includes a period of clinical education and covers the breadth of medical laboratory practice as outlined in the CSMLS competency profile. It also addresses topics unique to IEMLTs, including English-as-a-second-language challenges, North American cultural and professional norms, and orientation to healthcare in Canada. Such a program assumes foundational knowledge in medical laboratory practice and is not suitable for those with no experience or education in the field or for those with major gaps in their professional backgrounds. It is not an alternative to full-time entry-level education.

The definition we have constructed was necessary to provide the foundations for the economic analysis but it constitutes a limitation to broader application of the findings. Not all bridging programs will be full-time and not all will follow the program structure we have used (9 months' classroom study and 12 weeks of clinical placement). We use this proposed structure to guide future discussions about bridging programs and not to constrain them.

### Information gathering

CSMLS staff supplied C<sub>4</sub>SE's consultants with data, publications and historical context for medical laboratory certification, CSMLS PLA processes, IEMLTs, and medical laboratory education practices. We also provided contact information for key informants. The consultants made use of proprietary analytical tools and data available through public information venues such as Statistics Canada.



## HIGHLIGHTS OF THE ANALYSIS

The Appendix of this report contains the economic analysis conducted by the C<sub>4</sub>SE consultant, Robin Somerville, *The Economic and Financial Benefits of Bridging Programs for Internationally Educated Medical Laboratory Technologists*. In our discussions, we refer to the C<sub>4</sub>SE report as “The Somerville Analysis.”

**“... in a standard cost-benefit sense, funding bridging programs for IEMLTs represents good public policy.”**

*Somerville, 2009*

We present the main points of the Somerville Analysis here to frame the discussions that follow in the next section of this document.

- The direct public sector operating cost to provide bridging programs with clinical placements for 200 IEMLTs is estimated at \$4.6 million.
- Bridging programs can decrease both the direct costs and foregone wages for IEMLTs seeking CSMLS certification.
- The additional GDP arising from the increase in qualified MLTs working in Canada exceeds the public sector costs of running the programs from the first year on while long-term gains are realized at both provincial and national levels.
- Limiting the analysis to the implications for government finances indicates that this strategy will earn a positive rate of return in less than a decade.

Somerville concludes his analysis by pointing out the “unambiguously positive” (p. 16) economic and societal benefits of bridging programs for the economy.

## DISCUSSION

This discussion contextualizes and builds on the findings of the Somerville Analysis. First, we clarify the assumptions and constraints with which the report was developed. Then we examine the implications of the report for implementation, including possible next steps.

### Contextualizing the consultant's report

#### **Costs included in the model**

In his discussion, Somerville refers to 'a national bridging program', but it is important to note that the economic analysis is based on the current loosely linked structure and does not account for any costs associated with coordination or centralization. As well, no capital costs or start-up funding are accounted for in the economic analysis. The model addresses only operating costs. The projections assume that the resources (including laboratory equipment, classroom space, and instructional staff) are already available. As mentioned earlier, this analysis is based on one very specific model for a bridging program and does not represent the breadth of models that may be considered. The funding model proposed in this analysis can be adapted for differing program structures. As a point of comparison to the \$20,000 per student per year cost proposed in this model of bridging programs, the costs for educating medical laboratory students in full-time entry-level Canadian programs have been estimated at up to \$35,000 per student per year.<sup>17</sup>

#### **Examination pass rates for IEMLTs**

The Somerville analytical model assumes that IEMLTs will pass the certification examination at the same rate of success as graduates of

full-time Canadian MLS programs. There are no data available yet to confirm this as the numbers of bridging program graduates are still too small to provide significant data.

### Direct certification costs for IEMLTs

Taking a bridging program does not reduce IEMLTs' direct costs of certification outlined in the Somerville Analysis. In terms of tuition alone, taking a full bridging program is more costly than taking individual targeted upgrading courses. As well, certain costs continue regardless of the path chosen: the PLA process, examination fees, and textbook purchases. However, with a bridging program, the time required for an IEMLT to proceed to the CSMLS examination could be reduced by one half to two thirds. As a result, the *indirect costs*, namely foregone wages, decrease dramatically with a bridging program.

### Inclusion of clinical placements

Research on preparing internationally educated professionals stresses

**“... the best bridge training programs link individuals directly with employers ... They provide *supervised work experiences in relevant work placements.*”**

*SP Consulting and  
The Whetstone Group, 2008*

the importance of creating linkages to employers.<sup>15</sup> Research in the medical laboratory profession supports the importance of clinical placements in the educational preparation of medical laboratory technologists<sup>13,15</sup> and of IEMLTs in particular.<sup>14</sup> *Funding* clinical placements responds to research that encourages developing employer incentives for supporting newcomer employees.<sup>6</sup> Clinical

placements also address the employment barrier posed by the lack of

Canadian work experience. Although it is possible to create a far less costly program by excluding clinical placements, it would not meet the needs of the stakeholders in the process.

### **The conservative approach of the analysis**

Somerville's estimates for economic benefits of bridging programs are conservative, as they assume that IEMLTs work as medical laboratory assistants/technicians (MLA/Ts) while awaiting certification as MLTs. If the majority are working in positions that are lower-paid than MLA/Ts (which is likely, as MLA/T positions are not readily available), then the foregone wages for IEMLTs is actually much higher for every year IEMLTs are unemployed. It follows, too, that the potential increases in GDP stand to be significantly higher than predicted in the report.

In addition, the underlying assumption of this entire project is that the medical laboratory science profession will continue to experience the shortages, predicted by the CSMLS, noting that up to half of the MLT workforce would be eligible to retire in the next five to seven years.<sup>18</sup> We do not have more recent data to support this prediction, and in fact, we are seeing some factors that call for updating the data. For example, the recent economic downturn may have prompted some MLTs to delay their retirement plans. Some Canadian provinces are in the throes of restructuring their laboratory services, cutting back on MLT staff and hiring MLA/Ts to perform some laboratory tasks. Professional immigration patterns may change as policies and workforce priorities shift.

However, if history (including past healthcare restructuring) teaches us anything, it is that labour force planning requires far more foresight than current workforce priorities alone can furnish. The fact remains that we have a backlog of IEMLTs in the system, new IEMLT clients continue to apply to CSMLS, and employers in some parts of the country continue to experience MLT workforce shortages.

### Next steps

The economic study provided in the Somerville Analysis makes a convincing case that a series of bridging programs operating along the lines of a current program model will reap economic benefits for IEMLTs, for Canadian provinces and for the nation. Simply providing funding for full-time operation of the existing program and of programs that are on hold or operating on a continuing education basis would return benefits. The Somerville Analysis indicates that the benefits are scalable and will accrue even with partial implementation.

### The current process

A look at how IEMLTs are currently certified will contribute to the later discussion of how the process could evolve. Currently, IEMLTs who apply to the CSMLS for certification go through the series of steps outlined in Figure 1.

Medical laboratory science is one of only two health professions in which there is a single national access point for professional certification. This has obvious advantages for our internationally educated clients, and may

be responsible for the fact that the medical laboratory profession has the highest percentage uptake of newcomers to Canada.<sup>19</sup>

**Figure 1:** A model of the current certification process for internationally educated medical laboratory technologists.



Note: The learning plan can consist of a bridging program or, more often, a collection of upgrading courses recommended by the CSMLS.

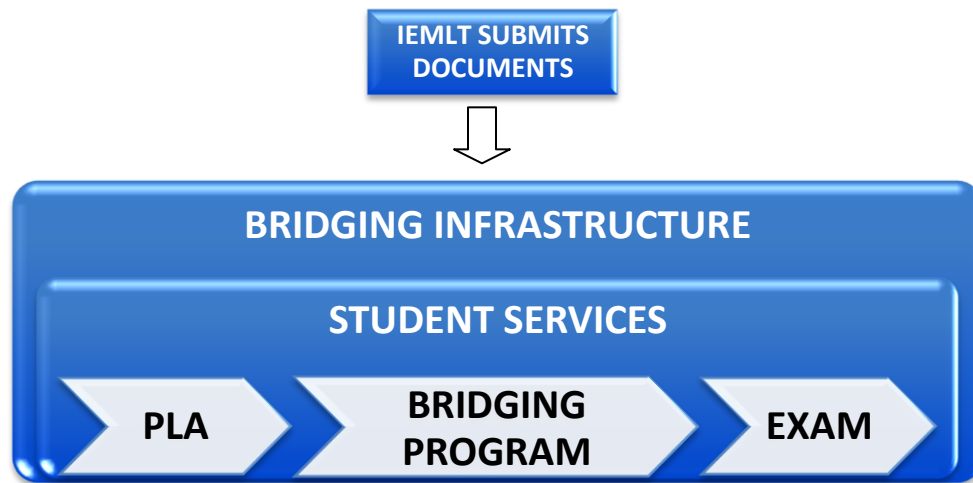
### **A potential model**

The CSMLS IEMLT Task Force proposed a mandatory bridging process for all IEMLTs<sup>14</sup> and the current capacity of bridging programs is far below this expectation. As noted earlier, CSMLS receives PLA applications from approximately 300 IEMLTs per year, more than 90 per cent of whom require some degree of upgrading.<sup>7</sup> The small class sizes and geographical locations of the operating programs limit their accessibility for the majority of PLA applicants.

Furthermore, the Task Force and a recent report on financial assistance for immigrant training<sup>6</sup> suggest that some form of oversight and coordination would be beneficial. This is discussed further in the section below.

With these points in mind, a simple model might look like this:

**Figure 2: An integrated infrastructure model for bridging programs for internationally educated medical laboratory technologists.**



Arriving at a new model for bridging programs is beyond the scope of this project and requires further research and consultation. Nonetheless, there are points that merit mention here as a starting point for that discussion. For example, a recent report on best practices in bridging programs noted the importance of:

- Integrating program elements;
- tailoring program delivery and ensuring support mechanisms are in place; (including flexible elements)
- building upon strong partnerships, especially with employers;
- situating bridge training within a wider context of systemic change;
- and building evaluation into all programs.<sup>6</sup>



In light of these points, the following issues are worth consideration when looking at next steps for action on the outcomes of the analysis.

**Timeliness:** Federal and provincial governments can readily realize returns with immediate funding to expand current programs and to re-establish programs suspended due to lack of funding.

**Student support:** Lack of financial assistance and barriers to obtaining financial assistance can prevent IEMLTs from taking advantage of a bridging program. There are considerable inconsistencies among programs and the availability of financial assistance. ‘Continuing education’ or ‘part-time’ status of a bridging program may mean that students are not eligible for financial assistance through student loan programs. Students in programs offered through ‘pilot’ or ‘startup’ funding models or by non-designated programs may be financially marginalized because of the program status. Integrating bridging programs into the operating budgets of educational institutions can help gain a program the recognition it needs to ensure its participants are able to receive financial assistance. For example, Quebec has the majority of its bridge training programs integrated into the CEGEP system (*Collège d’enseignement général et professionnel*).<sup>6</sup>

**“...a lack of financial assistance is a common barrier to accessing bridge training programs.”**

*SP Consulting and  
The Whetstone Group. 2008*

**Program flexibility:** Some bridging program students report a strong preference for face to face interaction; such experiences permits immediate feedback on communication skills.<sup>10</sup> Individual tailoring can help to meet specific needs and avoid redundant training for newcomers.<sup>15</sup> Flexible scheduling and program delivery (for example, through online courses) can enhance accessibility for those who cannot attend a full-time program while ensuring that participants have opportunities for professional socialization, cultural orientation, and networking.

**System capacity:** Bridging programs must not compromise the capacity of the existing full-time entry-level programs. A bridging program's requirements for medical laboratory educational facilities may place

**“...Programs must be designed with input from all stakeholders, must include accurate and comprehensive assessment or participants, and must be financially solvent.”**

*Public Policy Forum, 2008*

demands on the resources of existing full-time programs that are already struggling for time, space, and teaching staff. An even greater concern is the clinical placement funding proposed in this report's model. While we fully endorse funding clinical placements as a means of encouraging employers to take on students, we note that clinical

placements in current entry-level programs are not funded. If clinical placement funding is implemented for bridging programs, there is a high probability that employers will 'drop' their clinical students from full-time entry-level programs in order to receive the funding associated with bridging programs' clinical students. Without their placements, entry-level programs will produce fewer graduates, cancelling out any

labour market benefits that bridging programs will produce. Funding the clinical placements for bridging programs **MUST** be accompanied by funding for full-time programs. This cost has not been figured into the economic model in this report. These contentions assume (1) that there are no systemic reasons for employers' resistance to taking on students beyond their economic impact on the laboratory and (2) that providing compensation will make hosting clinical placements more attractive to laboratory employers.

**Oversight:** The CSMLS Task Force recommended a central coordinating body for its bridging program model.<sup>14</sup> Other research points out the need for student services that help students gain the resources and support they need.<sup>6</sup> Lack of communication is a common problem with bridging programs, and it can be difficult to share best practices among a broad range of organizations. These points argue for some degree of centralization and coordination. Questions of where this oversight would reside, what it could look like, and how much it would cost require further analysis. The integrity of current bridging programs' processes must be preserved and honoured in any centralized model.

**Standardization:** Medical laboratory programs are typically structured around the CSMLS competency profile, which outlines the competencies expected of entry-level technologists. This provides a measure of standardization among programs. At some point it would be advisable to investigate accreditation of bridging programs with the Canadian Medical Association (CMA) as currently takes place for full-time entry-level programs. Accreditation could enhance the credibility and accountability of the new programs.

**Funding structure:** The Somerville analysis has constructed a model in which the federal government shares bridging program funding with the provinces in which they reside, while pointing out the logic of federal-only funding for programs that create professionals with national portability, such as IEMLTs. There is precedent for sole funding by a province in the International Pharmacy Graduate Program in Ontario.<sup>10</sup>

**Clinical funding accountability:** A previous inquiry into clinical placements for medical laboratory students revealed that, even where clinical placements were being funded, payments made to the clinical sites were absorbed into global institutional budgets rather than being directed to the laboratories to defray their costs of taking on instructional responsibilities.<sup>13</sup> Any future funding for clinical placements would need to follow strict guidelines for appropriate use.

**Sustainability:** Targeted pilot and short term funding of programs leads to frequent turnover, minimal opportunities to build partnerships, and

**“(B)ridge training ... is not an interim measure to fill a temporary gap – either for the individual or for the economy.”**

*SP Consulting and  
The Whetstone Group, 2008*

difficulty demonstrating successful outcomes. Stable programs permit the kind of evidence-informed research on outcomes that is sorely lacking for bridging programs. Stable long-term funding is the only means of creating reliable programming and avoiding the disappointing bridging program closures and down-sizing that the medical laboratory

profession has experienced. For example, incorporating bridging program funding into the operating budgets of educational institutions creates

programs that are fully recognized and entitles their participants to essential financial assistance.

***Consultation:*** Planning and implementing a profession-wide bridging strategy must include consultation with employers, educators, IEMLTs, medical laboratory practitioners, regulatory bodies, funders and local communities.



## CONCLUSIONS

The economic analysis conducted for this project demonstrates clear economic advantages for funding bridging programs when considered in isolation. The case is complicated by their potential systemic impact on existing entry-level programs, in terms of both competition for clinical placements and educational capacity and by additional costs associated with meeting ‘best practices’ criteria for bridging programs.

The economic benefits of bridging programs for IEMLTs affirm the CSMLS’s advocacy efforts among policy-makers seeking federal and provincial contributions to the workforce integration of IEMLTs. These contributions can address both health human resource challenges and the need for equitable treatment of newcomer professionals to Canada.

A cohesive and integrated strategy for implementing IEMLT bridging programs requires a consultative approach and introduces systemic complications. Not the least of these is the challenge of providing Canadian clinical experience for IEMLTs in a healthcare environment that is, at best, ambivalent in its support for educating aspiring healthcare professionals. These issues merit further discussion but need not delay immediate attention to supporting both the bridging programs already in place and the IEMLTs who seek such programs to gain professional certification.

Bridging programs for IEMLTs are not just good policy, but the right thing to do. Having brought newcomers to this country with promises of

employment in their fields, we can benefit both them and the labour force by ensuring that they have the skills, resources and support to work in their intended professions.



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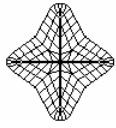
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## APPENDIX

The Economic and Financial Benefits of Bridging Programs for Internationally Educated Medical Laboratory Technologists.





**The Centre for Spatial Economics**

*Assessing past, present and future economic and demographic change in Canada*

# **The Economic and Financial Benefits of Bridging Programs for Internationally Educated Medical Laboratory Technologists**

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## **Abstract**

This study examines the economic benefit of allowing a specific group of workers, internationally educated medical laboratory technologists (IEMLTs) to achieve their earnings potential more rapidly with the intervention of a bridging program. New immigrants and their families face costs of \$100,000 or more in qualifying to work as a medical laboratory technologist (MLT) in Canada. The need for these workers is well established as current MLT program enrolments are barely meeting local needs across most of the country and likely will not be sufficient to produce enough new graduates to replace those who will retire over the next 10 to 15 years. This study finds that publicly supported bridging programs can return a positive pay-off to society in their first year and to the public sector in less than a decade.

## **About This Study**

This study was commissioned by the Canadian Society for Medical Laboratory Science (CSMLS) to provide analysis of the financial and economic benefit of public funding for bridging programs for internationally educated medical laboratory technologists (IEMLT). The CSMLS is the national certifying body for medical laboratory technologists and medical laboratory assistants, and the national professional society for Canada's medical laboratory professionals. The CSMLS promotes and maintains a nationally accepted standard of medical laboratory technology by which other health professionals and the public are assured of effective laboratory services and also promotes, maintains and protects the professional identity and interests of the medical laboratory technologist and of the profession.

The study was conducted by Robin Somerville of The Centre for Spatial Economics (C<sub>4</sub>SE). The C<sub>4</sub>SE monitors, analyzes, and forecasts economic and demographic change throughout Canada at virtually all levels of geography. It also prepares customized studies on the economic, industrial and community impacts of various fiscal and other policy changes, and develops customized impact and projection models for in-house client use. Our clients include government departments, industry and professional associations, crown corporations, manufacturers, retailers and real estate developers.





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## **Executive Summary**

This study examines the economic benefit of allowing a specific group of workers, internationally educated medical laboratory technologist (IEMLTs) to achieve their earnings potential more rapidly with the intervention of a bridging program.

Despite the ravages of the recent recession on labour markets, the Canadian economy faces a critical shortage of workers over the next few decades. The federal government has been aware of the looming problem for some time and has responded by encouraging large numbers of immigrants to come to Canada. Medical laboratory science is one of seven professions that have been identified as a priority for health human resources and internationally educated professional issues and medical laboratory technologists were among the top ten professions immigrating to Canada between the years of 1996 and 2000.

Numerous studies and stories in the media, however, have highlighted the unique challenges this generation of immigrants have faced in achieving success. New immigrants and their families face costs of \$100,000 or more in qualifying to work as a medical laboratory technologist in Canada. This is too high for some. Many applicants become discouraged during the prior learning and assessment process (PLA) and certification process and withdraw. The skills for which they were granted admission to Canada are never used. Some return home while some continue to labour in low skill, low wage jobs trapped along with the growing number of immigrants that fail to catch up with their Canadian born peers.

The CSMLS recommends that a full bridging program be open to the 84 to 95% of individuals whose PLA report indicates that they require refresher courses to make them equivalent to the Canadian standard – about 200 individuals a year. Bridging programs can significantly reduce the amount of time taken to complete the supplementary education and increase the success rate of graduates in passing the CSMLS National Certification Examinations. The program would be available in a variety of forms and locations, and would be accessible through a centralized application process. The program should orient IEMLTs to the requirements of Canadian health care workplaces and would help them prepare for the CSMLS certification examination. All programs would include a clinical practice experience.

The direct public sector operating cost to run a national bridging program with clinical placements for 200 IEMLTs is estimated to be \$4.6 million (measured in 2009 dollars). The economy benefits from the bridging program, not because more people are working, but because the IEMLTs are working in their field – earning higher wages and enhancing Canada's productivity. The higher wages translate into higher spending which has a ripple effect throughout the economy.

The additional GDP arising from having more qualified MLTs working in Canada exceed the public sector costs of running the program from the first year on. Limiting the analysis to the implications for government finances indicates that the program will earn a positive rate of return in less than a decade. Thus, in a standard cost-benefit sense, funding bridging programs for IEMLTs represents good public policy.

While the economic impacts are small, they are also unambiguously positive for the economy, governments, and our immigrant community. While few in number, the work carried out by these professionals has the potential to touch a very large number of lives. Their expertise and knowledge is needed – their immigration applications were approved on the basis of their skills



and credentials. Initiatives to promote the integration of new immigrants into Canadian society and to allow them to achieve their full potential deserve a high priority on the public agenda.



## Introduction

Despite the ravages of the recent recession on labour markets, the Canadian economy faces a critical shortage of workers over the next few decades. The federal government has been aware of the looming problem for some time and has responded by encouraging large numbers of immigrants to come to Canada. Numerous studies and stories in the media, however, have highlighted the unique challenges this generation of immigrants have faced in achieving success.<sup>1</sup>

Significant barriers to entry for internationally educated professionals have been identified as a key factor in preventing immigrants from achieving success. In 2001 the Conference Board of Canada estimated that eliminating the learning recognition gap would give Canadians an additional \$4.1 billion to \$5.1 billion in income annually and that more than 540,000 Canadians stood to gain an average of \$8,000-\$12,000 each year from improved learning recognition.<sup>2</sup>

This study examines the economic benefit of allowing a specific group of workers, internationally educated medical laboratory technologists (IEMLTs) to achieve their earnings potential more rapidly with the intervention of a bridging program.

MLTs perform laboratory tests that are used to diagnose and treat disease. About 80% of MLTs work in hospitals with the remainder in private laboratories, public health laboratories and other organizations.<sup>3</sup> The demand for MLTs is growing because (i) Canada's growing and aging population requires more health services and (ii) new technologies are improving the ability to diagnose disease. Current MLT program enrolments are barely meeting local needs across most of the country and likely will not be sufficient to produce enough new graduates to replace those who will retire over the next 10 to 15 years. CSMLS estimates that over 50% of Canada's medical laboratory technologists will be eligible to retire by 2016.<sup>4</sup>

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<sup>1</sup> See, for example:

Abdurrahman A, Skuterud M. *Explaining the Deteriorating Entry Earnings of Canada's Immigrant Cohorts: 1996-2000*. Ottawa, ON: Statistics Canada Cat. No. 11F0019MIE – No. 225; 2004.

Dryburgh H, Hamel J. *Immigrants in demand: Staying or leaving?* Ottawa, ON: Statistics Canada, Cat. No. 11-008; 2004. “

Galarneau D, Morissette R. *Immigrants' education and required job skills*. Ottawa, ON: Statistics Canada, Cat. No. 75-001-X; 2008.

Gilmore J, Le Petit C. *The Canadian Immigrant Labour Market in 2007: Analysis by Region of Postsecondary Education*. Ottawa, ON: Statistics Canada Cat. No. 71-606-X; 2008.

Statistics Canada, *Earnings and Incomes of Canadians Over the Past Quarter Century*. Ottawa, ON: Statistics Canada, 2006 Census Cat. No. 97-563-X; 2008.

<sup>2</sup> Bloom M, Grant M. *Brain Gain: Economic Benefits of Recognizing Learning and Learning Credentials in Canada*. Ottawa, ON: The Conference Board of Canada, 2001.

<sup>3</sup> Davis KH. *CSMLS New Graduate Employment Survey – 2007*. Hamilton, ON: CJMLS December 2008 Vol.70 No.6; 2008.

<sup>4</sup> Davis KH. *2008 Health Human Resources Update – A Small Step Forward?* Hamilton, ON: CJMLS December 2008 Vol.70 No.6; 2008.



Medical laboratory science is one of seven professions that have been identified as a priority for health human resources and internationally educated professional issues.<sup>5</sup> Medical laboratory technologists were among the top ten professions immigrating to Canada between the years of 1996 and 2000.<sup>6</sup> Current health human resource issues make the transition of these internationally educated health professionals into the workforce a priority for government policy-makers at both the federal and provincial levels.

IEMLTs establish their eligibility to sit the CSMLS National Certification Examinations through a prior learning assessment process (PLA). The PLA evaluates their academic credentials, experiential (practical) learning, professional development and work history to determine equivalency to the national competency profile, which is the standard for Canada. The CSMLS receives approximately 300 applications a year to its PLA process.

The CSMLS recommends that a full bridging program be open to the 84 to 95% of individuals whose PLA report indicates that they require refresher courses to make them equivalent to the Canadian standard – about 200 individuals a year. The program would be available in a variety of forms and locations, and would be accessible through a centralized application process. The program should orient IEMLTs to the requirements of Canadian health care workplaces and would help them prepare for the CSMLS certification examination. All programs would include a clinical practice experience.

An occupation-specific bridging program for MLTs is currently available only in Ontario – at Mohawk College – and is too small to serve the needs of that province, let alone the nation. Further compounding the pressures on clinical education is the need for clinical education sites for the MLT bridging programs. Clinical rotations in real Canadian workplaces are an invaluable component of these programs. However, they are usually competing against full-time MLT programs for clinical rotation seats. Currently, full time students are having difficulty finding clinical placement positions to complete their education. As a result, the funding of a bridging program must include a one-for-one increase in the number of clinical placement positions available relative to the number of bridging program positions created.

CSMLS research indicates that it takes an average of two years for an IEMLT to successfully complete the PLA and certification process.<sup>7</sup> Many applicants must complete English/French language courses prior to applying to the CSMLS for a PLA. When education gaps are identified in the PLA, the applicant must address these gaps with supplementary education before advancing to the certification process. The time required for certification for many new immigrants is, therefore, somewhere between three and five years. Bridging programs can significantly reduce the amount of time taken to complete the supplementary education and increase the success rate of graduates in passing the CSMLS National Certification Examinations.

This research examines the economic and financial benefits of public funding of bridging programs for internationally educated medical laboratory technologists. The next section

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<sup>5</sup> Human Resources and Social Development Canada. *Integration of internationally trained health professionals*. Ottawa, ON: HRSDC; 2007.

<sup>6</sup> Ontario Ministry of Citizenship and Immigration. Citizenship and Immigration Canada LIDS data for immigrants aged 18-64. Toronto, ON: Ontario Ministry of Citizenship, Immigration and Settlement Unit; no date.

<sup>7</sup> Grant, MM. *CSMLS Prior Learning Assessment Clients – A Snapshot*. Hamilton, ON: CJMLS Vol.71 No.5; 2009.



estimates the cost of credential recognition borne by immigrants and their families. This is followed by an examination of the costs of establishing a national bridging program for IEMLTs and the economic benefits that could flow from such a program. A cost-benefit review of the program is followed by a few concluding remarks on the research.



## The Cost of Credential Recognition for IEMLTs

This report considers both the private and the societal economic costs and benefits of expanding bridging programs for internationally educated medical laboratory technologists. The private costs are those borne by the individual and their family while the costs to society are broadened to consider the impact on economic activity and the public sector.

The (private) cost to new immigrants include the fees and costs associated with becoming certified to work as an MLT in Canada plus the cost of foregone wages during the certification process. The average foreign educated professional requires 3-5 years to become certified and employed as a medical laboratory technologist in Canada during which time they are frequently employed in survival jobs. Effective bridging programs can cut this period to as little as one year.

**Table 1: IEMLT Expenses for PLA and Certification**

Transcript fees	<ul style="list-style-type: none"> <li>\$10 to \$15 per copy + shipping/courier; (costs at Canadian institutions; no data for international institutions)</li> <li>Clients typically submit 1 to 2 documents each (i.e., transcripts from 1 to 2 institutions)</li> <li>One copy of each document</li> </ul>
Document translation	<ul style="list-style-type: none"> <li>Costs vary widely depending on the number of documents and their complexity; a conservative estimate would be \$250 per document</li> <li>Required by approximately 3% of clients</li> </ul>
Credential authentication	CSMLS accepts verification from either of two organizations: <ol style="list-style-type: none"> <li>ICES \$225 per document</li> <li>WES \$200 flat rate plus shipping fees (used by less than 5% of clients)</li> </ol> <ul style="list-style-type: none"> <li>1 to 2 documents per client</li> </ul>
Language proficiency testing	Any one of four tests accepted if they meet the required cut scores TOEFL: \$200 – \$300, depending on test country IELTS: \$200 – \$250, depending on test country CanTest: \$270 – \$290, depending on test location MELA: \$250 <ul style="list-style-type: none"> <li>Required by 15 to 20% of clients, some of whom take the test two or more times before meeting CSMLS standards</li> </ul>
PLA process	Initial application fee: \$549 for 2009; will rise to \$675 in 2010 Supplemental fee: \$100 <ul style="list-style-type: none"> <li>required by approximately 4% of clients</li> </ul> Appeal fee: \$100 <ul style="list-style-type: none"> <li>required by approximately 1% of clients</li> </ul>
Learning plan courses	<ul style="list-style-type: none"> <li>95% of clients require upgrading courses</li> <li>They take an average of three courses each, with costs ranging from \$300 to \$1000 per course</li> </ul>
Certification examination fee	Examination fee: \$450 for CSMLS members \$675 for non-members \$1350 for non-residents <ul style="list-style-type: none"> <li>Fee to rewrite exam same as regular fee<sup>8</sup></li> </ul>
Other costs	Text books & other learning resources: \$200 to \$1000 CSMLS associate membership: \$109 Many unspecified hidden fees

Source: information collected by CSMLS

<sup>8</sup> Approximately half of IEMLT applicants to CSMLS achieve eventual eligibility to write the national certification examination. Approximately 66% of these applicants eventually pass; 40% on the first attempt; 13% on the second attempt; and 13% on the third or later attempts.



The private cost to new immigrants also includes a wide array of fees and other costs to establish their credentials. These are summarized in Table 1.

At present, an IEMLT must incur a large number of personal costs in order to become certified with the CSMLS. These costs include fees to obtain their transcripts and, if necessary, the cost of having them translated. The IEMLT must also have their credentials authenticated and, if necessary, take a language proficiency test.

The fees for the CSMLS's prior learning assessment (PLA) process will rise to \$675 in 2010 and could be higher for some applicants if supplemental or appeal fees are assessed. The PLA process advises most applicants that they need to upgrade their courses before taking the certification exam. The certification examination fee is \$450 for CSMLS members and must be paid each time the exam is attempted.

Table 2 shows that the PLA and certification costs for an applicant that eventually takes the certification exam range from an absolute minimum of about \$1,500 to somewhere close to \$10,000 with the average cost likely being about \$4,600. The total cost for the average applicant that enrolls in and attends the bridging program at Mohawk College in Ontario is a little in excess of \$12,000. The bridging program includes 23 courses, 3 of them being clinical placements, along with language support and study in other areas of the CSMLS competency profile. As a result, tuition fees for the bridging program are significantly higher than the education costs for other students who are assumed to take only three to five courses; just enough to satisfy the requirements of their PLA.

**Table 2**

	Private Costs to IEMLTs and their Families			With Bridging Program(*)
	Without Bridging Program Minimum Cost	Without Bridging Program Maximum Cost	Without Bridging Program Average Cost	
<b>PLA &amp; Certification Process Costs</b>				
transcript fees	10	30	20	20
document translation	-	500	15	15
credential authentication	225	450	338	338
language proficiency testing	-	300	60	60
PLA process	675	875	680	675
learning plan courses	-	3,000	1,500	7,900
text books & other educational supplies	-	3,000	1,200	2,500
certification examination fee	450	1,350	720	450
CSMLS membership	109	109	109	109
<b>Total PLA &amp; Certification Costs</b>	<b>1,469</b>	<b>9,614</b>	<b>4,642</b>	<b>12,067</b>
<b>Foregone Income</b>				
# years of foregone income	4	6	5	2
Average annual income foregone	17,548	17,548	17,548	27,286
<b>Total Income Loss</b>	<b>70,193</b>	<b>105,290</b>	<b>87,742</b>	<b>54,572</b>
<b>Total Private Cost</b>	<b>71,662</b>	<b>114,904</b>	<b>92,383</b>	<b>66,639</b>

\* Tuition cost based on the current program offered by Mohawk College in Ontario

The income foregone by IEMLTs during the PLA and certification process is estimated using the median income earned in Canada by MLTs relative to the median income earned by medical laboratory technicians (see Table 3). Laboratory technicians work under the supervision of MLTs and assist in preparing and conducting medical tests in the laboratory.<sup>9</sup> While many IEMLTs are

<sup>9</sup> The distinction between technicians and technologists is confusing, and results from a lack of clarity in the federal government's National Occupational Classifications (NOC). However, for the purposes of this analysis, the distinction is crucial. Medical laboratory technologists are a regulated profession in most provinces, with a prescribed post-secondary education process and a mandatory certification examination.





able to secure employment in this lower skilled area, many others work in other low skill, low wage jobs. IEMLTs that don't attend a bridging program are assumed to work full-time at a wage equivalent to a medical laboratory technician – leading to a total loss of income of between \$70,000 and \$105,000 relative to working full-time as a MLT. IEMLTs that attend a bridging program are assumed to earn income during the PLA process and until the start of the bridging program's next term, and during the wait for the next exam session. However, their income for the year they are attending the full-time bridging program would be negligible; as a result their average income loss is about \$55,000.<sup>10</sup>

The minimum total private cost, including foregone earnings, to IEMLTs and their families is about \$72,000 and rises to a maximum well in excess of \$100,000. The total private cost to applicants that attend Mohawk College's bridging program is about \$67,000 which compares favourably to the average for other applicants of \$92,000.

**Table 3**

	Median Employment Income in 2005										
	CA	NL	PE	NS	NB	QB	ON	MB	SK	AB	BC
Medical Laboratory Technologists	49,611	47,394		47,814	45,907	42,837	56,811	50,794	46,854	55,378	54,093
Medical Laboratory Technicians	33,658	35,086		29,693	31,420	34,769	32,143	31,010	30,953	35,435	35,715
Difference	15,953	12,308		18,121	14,487	8,068	24,668	19,784	15,901	19,943	18,378

Source: Statistics Canada - 2006 Census Catalogue Number 97-563-XCB2006063

It should be noted that the cost of preparing to become certified in Canada may be higher for some applicants. They may, for example, have to take ESL classes, attend resume-writing or job-hunting classes.<sup>11</sup> These costs have been excluded since they are not strictly a part of the certification process.

Costs to new Canadians of anywhere between \$30,000 and \$100,000 to qualify to work in their chosen field are high. Too high for some. Many applicants become discouraged during the PLA and certification process and withdraw. The skills for which they were granted admission to Canada are never used. Some return home while some continue to labour in low skill, low wage jobs trapped along with the growing number of immigrants that fail to catch up with their Canadian born peers.

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Medical laboratory technicians (also known as assistants) are not regulated, and have no mandatory educational or certification processes as part of their preparation for the workplace. Many are trained on the job. These differences account for very different levels of workplace responsibility and for the salary gaps between the two groups.

<sup>10</sup> Mohawk's bridging program is currently part-time and part of the School of Continuing Education. As a result, students are not eligible for provincial student assistance (OSAP) and many of them work part-time in low income environments in order to fund their education. The CSMLS recommends that bridging programs be recognized as full-time or made eligible for student assistance through some other mechanism.

<sup>11</sup> ESL and job hunting classes are currently included in the Mohawk College bridging program. The CSMLS recommends that these services be included in all new IEMLT bridging programs.



## The Cost of a National Bridging Program for IEMLTs

The cost in foregone wages is both a cost to the immigrant and to society as a whole. This loss is estimated based on (i) the assumption of increased funding to accommodate up to 200 candidates in bridging programs and (ii) the difference in income earned between a survival job and a career as a medical technologist.

This study assumes that a national policy will establish bridging programs across the country with an annual capacity of 200 students. These programs are established to correspond with the distribution of active CSMLS members in Canada (see Table 4). The study does not include any bridging programs in Quebec because the post-secondary education system in that province is providing the required number of new MLTs to meet the projected demand for new workers.<sup>12</sup> This is not case in other provinces where programs for domestic students are providing too few new graduates to meet projected needs.

Bridging programs to accommodate 57 students will be expanded or established in Ontario with programs for smaller numbers of students located in other provinces. In reality, it may be more efficient to establish a single program to serve Atlantic Canada and perhaps one program to serve both Manitoba and Saskatchewan. The study, however, assumes a geographically dispersed set of programs and assumes that the successful graduates work in the province in which they studied.<sup>13</sup>

Table 4

MLT Employment in 2007 and Assumed IEMLT Bridging Program Positions											
	CA	NL	PE	NS	NB	QB	ON	MB	SK	AB	BC
Employment	11,054	409	106	926	655	869	2,877	904	580	1,401	2,327
Share of National Employment		4%	1%	8%	6%	8%	26%	8%	5%	13%	21%
IEMLT Bridging Program Positions	200	8	0	18	13	0	57	18	12	28	46

Source: CSMLS membership (certified active RT, ART, FCSMLS), Author's assumptions

The economic impact depends on the difference in income earned by these professionals. According to the Census, the median income earned by MLTs in Canada was \$49,611 in 2005 and varied from a high of \$56,811 in Ontario to a low of \$42,837 in Quebec (see Table 3). This income is compared with what these individuals could earn without their certification. Many find employment as medical laboratory technicians, but some work in other fields. The median income for medical laboratory technicians in Canada was \$33,658 in 2005. This level of income is likely representative of the earnings of those that work in other fields.

The study uses the difference in the median wage earned by a technologist versus a technician to estimate the potential economic impact having more workers earning higher incomes. The potential additional annual income varies from a high of \$24,688 in Ontario to a low of \$8,068 in Quebec.

<sup>12</sup> No program is envisioned for Prince Edward Island because the number of students would be too low to make the program economically viable.

<sup>13</sup> This assumption is an analytic convenience and is designed to provide new workers to support the existing workforce in each province. In reality, qualified MLTs are nationally certified and have the option to work anywhere in the country. Newly qualified graduates from Mohawk College's bridging program regularly take advantage of employment opportunities across Canada.



This higher level of income is earned by IEMLTs that successfully qualify to practice in Canada. The success rate for IEMLTs that attend a bridging program is assumed to 84%.<sup>14</sup> IEMLTs that utilize a bridging program are assumed to be eligible to qualify in one year after their PLA assessment whereas the CSMLS has found that IEMLTs without access to a bridging program take longer to qualify. None of these students are eligible to qualify in the year following the PLA assessment, 10% are eligible in the second year, 23% in the third and a further 33% in the fourth. A total of two thirds of these students eventually qualify to work as MLTs while the remainder fail to have their credentials recognized in Canada.

Of the 200 students that attend a bridging program, 84% or 168 are assumed to qualify and begin working as an MLT after one year of study. For the cohort of IEMLTs beginning their learning plan supplemental education at the same time, but without the benefit of a bridging program, none enter the workforce in that first year. The number of IEMLTs outside the bridging program that qualify each year rises both for the initial cohort of students plus the cohorts in each following year. As a result, there are a net 162 additional MLTs in the year after the bridging program is established, a net 148 in the second year, 102 in the third, 56 in the fourth and a net 34 additional MLTs in each year after that (see Table 5).

Table 5

Number of Qualified IEMLTs With and Without the Bridging Program											
Years:	1	2	3	4	5	6	7	8	9	10	...
With Bridging Program	168	168	168	168	168	168	168	168	168	168	168
Without Bridging Program	0	20	66	112	134	134	134	134	134	134	134
Net Annual Increase in MLTs	168	148	102	56	34	34	34	34	34	34	34

The income data from the 2006 Census were adjusted for wage gains since that time in each province. This income was then used to adjust the average wage in each province times the net increase in the number of IEMLTs that successfully qualify to practice in Canada. Higher incomes for immigrant families boost their household spending which has a multiplier effect on the Canadian economy – raising incomes, employment, and government revenues. These societal benefits are evaluated using the C<sub>4</sub>SE's economic models of the Canadian economy. These models are sophisticated macroeconometric representations of Canada and its provinces and are frequently used to evaluate the economic impact of public and private sector spending and policy initiatives.

The bridging program is funded by student tuition fees and either federal or provincial government grants. The cost of the program includes two components: (i) the formal classroom component and (ii) the clinical placement component. The costs provided in this report only include operating costs for the programs. The study assumes that the bridging programs will be hosted at colleges across Canada that have existing full time medical laboratory programs so as to minimize any capital spending needed to deliver the programs. Capital spending was excluded because it was not known to what extent current institutions facilities can accommodate the program without the need to purchase additional equipment or to secure additional premises.

The operating costs of the classroom component are borne both by the student, in terms of tuition, and by the government in terms of an operating grant. The cost of tuition for the nine month bridging program at Mohawk College in Ontario is currently \$7,900. This study assumes that the

<sup>14</sup> The IEMLT success rate is assumed to be similar to that achieved by domestic students graduating from Canadian postsecondary MLT programs.



government provides larger operating grants so that tuition falls to \$6,000 and students bear 50% of the operating costs of the program (see Table 6).

Table 6

Bridging Program Classroom Costs	
Student tuition	6,000
Government operating grant	6,000
<b>Total Cost</b>	<b>12,000</b>

The cost of clinical placement is significant. In a review of the costs and benefits of clinical placements for MLTs the CSMLS found that clinical rotations shorter than 20 weeks raise the cost per week for placement because of various fixed administrative costs and the higher level of supervision and lower level of productivity of the student at the outset relative to later in the placement.<sup>15</sup> In that study the CSMLS developed an algorithm to estimate the cost of clinical placement positions. The assumptions and costs from that algorithm have been updated in Table 7 to reflect 2009 prices for a 12 week placement and yield a cost of \$16,964 per student for the placement portion of their training assuming one student per clinical placement site. A relatively short twelve week program was chosen because (i) it would lead to a total program length of about a year and (ii) the students already have prior experience but need to relate their knowledge to practices in the Canadian workplace. Any costs borne by the educational institution related to the clinical placement are factored into the institution's \$12,000 per student annual operating budget.

Table 7

Clinical Site Costs: per student for 12 week placement		
	Calculation	Cost per Student
<b>STAFF TIME</b>		
lab manager	9 hrs x (\$42.35 + \$7.62)	450
clinical co-ordinator(s)	120 hrs x (\$31.00 + \$5.58)	4390
instructors (first 10 weeks)	(.75 x 375) hrs x (\$25.85 + \$4.65)	8578
instructors (last 2 weeks)	(.50 x 75) hrs x (\$25.85 + \$4.65)	1144
human resources	10 hrs x (\$25.30 + \$4.55)	299
health services	1 hr x (\$25.30 + \$4.55)	30
support staff	2 hrs x (\$22.65 + \$4.26)	54
<b>EDUCATIONAL MATERIALS</b>		
\$275 per student		275
<b>SPACE and FACILITIES</b>		
20 square feet (50% use by students for 12 weeks)	\$685/sq. ft/year x 20 x .50 x 12/52	1,581
<b>MISCELLANEOUS MATERIALS</b>		
\$165 per student		165
<b>SUM FOR CLINICAL SITE COSTS</b>		<b>\$16,964</b>

Note: Employee benefits amounting to 18% of the hourly wage are used here

Table 8 shows that the total annual operating cost of a national bridging program with clinical placements for 200 IEMLTs is \$5.8 million (measured in 2009 dollars). The study assumes that government operating grants cover half the classroom education costs and all of the clinical placement costs. The annual direct public sector operating cost to run the program is estimated to be \$4.6 million. While the CSMLS believes this level of public support for the program is appropriate, a shift in the ratio of public support relative to tuition fees – either up or down – will

<sup>15</sup> Grant MM, Davis KH. *Clinical Placements for Canadian Medical Laboratory Technologists: Costs, Benefits, and Alternatives*. Hamilton, ON: Canadian Society for Medical Laboratory Science; 2004.



affect the cost-benefit analysis presented in the next section as would the inclusion of any capital costs incurred in establishing and maintaining the program.

**Table 8**

Annual IEMLT Bridging Program Operating Costs (thousands of 2009 dollars)											
	CA	NL	PE	NS	NB	QB	ON	MB	SK	AB	BC
Classroom Education Operating Costs	2,400	97		220	156		685	215	138	334	554
Student Tuition	1,200	49		110	78		343	108	69	167	277
Government Operating Grants (1)	1,200	49		110	78		343	108	69	167	277
Public Funding for Clinical Placements (2)	3,393	138		312	220		968	304	195	472	783
<b>Total Annual Operating Costs</b>	<b>5,793</b>	<b>235</b>		<b>532</b>	<b>376</b>		<b>1,654</b>	<b>520</b>	<b>333</b>	<b>805</b>	<b>1,337</b>
<b>Direct Annual Public Sector Funding (1+2)</b>	<b>4,593</b>	<b>186</b>		<b>422</b>	<b>298</b>		<b>1,311</b>	<b>412</b>	<b>264</b>	<b>638</b>	<b>1,060</b>

Offsetting this public sector expenditure is the expected increase in government revenues by source and level of government arising from the higher incomes earned – and spent – by these immigrant families. The C<sub>4</sub>SE's economic models of the Canadian economy are used to evaluate the impact on government revenues and net spending.



## The Economic Benefit of a National Bridging Program for IEMLTs

The economic benefit of establishing a national set of bridging programs for IEMLTs was estimated using the C<sub>4</sub>SE's Provincial Economic Modeling System. The C<sub>4</sub>SE's Provincial Modeling System is a dynamic multi-sector regional economic model of the country. It includes a bottom-up set of macroeconomic models for the provinces, the territories and the rest of the world. The national model links economic activity in one region with activity in the other regions through trade. The provincial models include detailed income and expenditure categories and demographic and labour market information. The purpose of the modeling system is to produce medium- to long-term projections of the provincial economies and conduct simulation studies that require industry and demographic detail.<sup>16</sup>

The inputs to the model consist of the direct public sector spending in Table 8 plus the increased earnings of the IEMLTs. The impact on the economy, measured in terms of gross domestic product (GDP), is shown for each province in Table 9. The economy benefits, not because more people are working, but because the IEMLTs are working in their field – earning higher wages and enhancing Canada's productivity. The higher wages translate into higher spending which has a ripple effect throughout the economy.

The benefits, in terms of increased GDP, continue to rise over time because the number of skilled persons in the labour force increases each year. The demonstrated success of bridging programs in ensuring that more applicants successfully obtain their certification than without the program drives an increase in the number of MLTs working in Canada.

Table 9

Impact of CSMLS IEMLT Bridging Program on GDP by Province								
	absolute difference from the baseline						Average 2010-14	Average 2015-34
	2010	2011	2012	2013	2014			
GDP Impact by Province (millions of 2009 dollars):								
Canada	4.7	4.3	7.0	7.2	11.7		7.0	52.2
Newfoundland & Labrador	0.5	0.6	0.4	-0.5	-0.5		0.1	0.5
Prince Edward Island	-0.4	-0.2	0.2	0.4	-0.3		-0.1	0.1
Nova Scotia	0.1	0.2	0.7	0.8	0.3		0.4	1.4
New Brunswick	-0.2	0.8	0.9	0.7	0.9		0.6	0.9
Quebec	0.1	-0.3	-0.2	-1.6	-0.9		-0.6	15.0
Ontario	2.1	2.3	3.2	4.0	5.3		3.4	19.8
Manitoba	0.0	-0.4	-0.6	0.1	0.4		-0.1	1.3
Saskatchewan	-0.3	0.1	0.6	-0.1	-0.1		0.0	1.7
Alberta	1.5	1.2	1.1	1.1	1.6		1.3	3.2
British Columbia	1.4	1.7	2.5	2.9	2.7		2.2	6.8

The benefit, in terms of additional GDP, rises an average of \$3.2 million each year out to the end of the simulation in 2034. The gains are largest in Ontario, reflecting the share of IEMLTs being trained in the province, but are also present in each of the other provinces that introduce a bridging program. Although Quebec does not participate in the program, its economy also benefits in the long-run due to trade effects – higher sales of goods and services to the other provinces – arising from the increased economic activity throughout the rest of the country.

<sup>16</sup> A more detailed description of the Provincial Economic Modeling System is included as an appendix to this study.



Despite higher incomes and the increase in government spending, the short-run GDP impacts are not positive for all provinces in every year. This outcome is temporary, and is the result of imports to that province rising to satisfy the increase in demand for goods and services. In some cases the shift in expenditure patterns leads to an increase in imports that is larger than the overall increase in spending by new MLTs and governments.

As noted above, government spending on the bridging programs and increased funding for clinical placements also contributes to the increase in economic activity. The study assumes that the increase in government spending is financed by either an increase in government revenues or through government borrowing.

Higher wages and higher spending ensure that the provincial and federal governments emerge with higher revenues from both direct and indirect taxes (see Table 10). The short-run government revenue impacts are also not positive for all provincial governments. This short-run result arises in response to changes in economic activity in the province. Provincial government revenues in Quebec and Manitoba fall in the short-term in response to lower GDP. Provincial government revenue in Alberta is reduced in the short-run because of its tax structure: a flat tax on personal income and no provincial sales tax. Over the long-run, however, revenues to all governments rise in response to elevated incomes and increased economic activity.

Table 10

Impact of CSMLS IEMLT Bridging Program on Government Revenues and Deficits							
	absolute difference from the baseline					Average 2010-14	Average 2015-34
	2010	2011	2012	2013	2014		
<b>Government Revenues (millions of 2009 dollars)</b>							
Combined Federal & Provincial Governments	0.9	1.6	2.5	2.1	2.8	2.0	14.2
Federal Government	0.5	0.7	1.1	0.7	1.1	0.8	5.5
Newfoundland & Labrador	0.0	0.0	0.0	0.0	0.1	0.0	0.2
Prince Edward Island	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nova Scotia	0.0	0.1	0.1	0.1	0.1	0.1	0.2
New Brunswick	0.0	0.0	0.0	0.0	0.1	0.0	0.2
Quebec	-0.1	0.0	0.0	-0.3	-0.2	-0.1	2.0
Ontario	0.3	0.4	0.7	0.9	1.1	0.7	2.1
Manitoba	-0.1	0.0	0.0	0.0	0.0	0.0	0.2
Saskatchewan	0.0	0.1	0.1	0.1	0.1	0.1	0.6
Alberta	0.1	0.0	0.0	-0.1	0.0	0.0	1.6
British Columbia	0.1	0.3	0.4	0.6	0.5	0.4	1.6

There are other societal benefits which are harder to quantify. An important benefit that has been highlighted in several major studies is the potential to reduce the incidence of “failed immigration” in which new immigrants fail to achieve an adequate level of economic success and so return to their country of origin or move to a third country.<sup>17</sup> This phenomenon is destructive on a personal level and also for society because of the resources that have been devoted to trying to integrate these immigrants.

<sup>17</sup> Dryburgh H, Hamel J. *Immigrants in demand: Staying or leaving?* Ottawa, ON: Statistics Canada, Cat. No. 11-008; 2004.

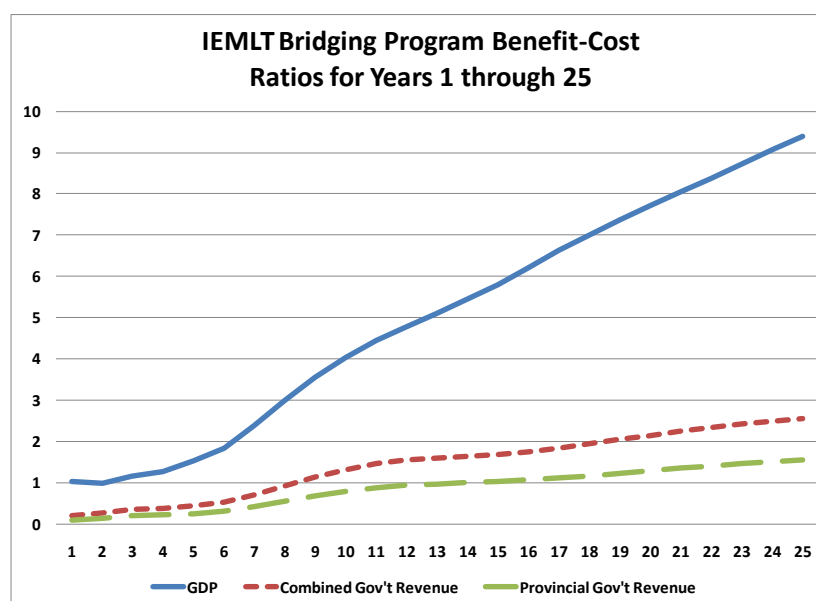


## Cost-Benefit Analysis

There are a variety of measures that can be used to evaluate the relative merits of establishing a publicly supported bridging program with clinical placement positions for IEMLTs across Canada.

The most common measure relates the benefit, in terms of additional GDP, to the direct cost of the program (benefit-cost ratio). Figure 1 shows the cumulative increase in GDP relative to the cumulative public sector cost of the program for the twenty five year simulation period. The benefit-cost ratio exceeds one – the point at which the program earns a positive rate of return – in the first year and continues to rise over the remainder of the simulation.

Figure 1



A second, more stringent measure, determines the relative costs and benefits to the public sector. Total government (federal and provincial) revenues rise \$0.9 million in the first year of the program – falling short of the \$4.6 million spent to run the program. By the ninth year of the program, however, total government revenues exceed the amount spent to run it and the benefit-cost ratio continues to rise for the remainder of the simulation. Achieving a positive rate of return does, however, takes another five years if the increase in federal government revenue is excluded. The break-even point is reached after 14 years if the program is solely funded by the provinces.

In summary, the additional GDP arising from having more qualified MLTs working in Canada exceed the public sector costs of running the program from the first year on. Limiting the analysis to the implications for government finances indicates that the program will earn a positive rate of return after less than a decade. Thus, in a standard cost-benefit sense, funding bridging programs for IEMLTs represents good public policy.





## Conclusion and Observations

The number of people directly affected by enhanced government support for internationally educated MLTs is small, and the overall economic impacts are very small relative to the size of the economy. But the work carried out by these people has the potential to touch a very large number of lives. Their expertise and knowledge is needed – their immigration applications were approved on the basis of their skills and credentials.

This study assumed that a program to serve 200 IEMLTs could be introduced all at once. Any implementation would, however, likely occur over several years with pilot programs introduced or expanded in two or three centres. The rate of return on public sector investment would remain the same regardless of the scale of implementation.

Several assumptions made in this study affect the estimated rate of return on the public investment in a bridging program. In particular:

- The income differential between IEMLTs that become certified to work in Canada and those that don't may be wider than assumed and may grow over time. The study ignored the potential for qualified MLTs to earn higher incomes over time through career development and promotion. Their income could grow significantly faster than the economy-wide average assumed in the study. Conversely, IEMLTs that do not qualify to work in Canada may experience employment outcomes worse than assumed in this study and are significantly less likely to be in occupations that offer significant career development and promotion. As a result, the study may understate the potential income gains over time arising from the program.
- It was also assumed that IEMLTs would pay tuition equal to half of the cost of the classroom component of the program. Changes in this assumption directly affect the public sector cost of the program and, as a result, the rate of return on investment in the program. Even relatively large changes in this proportion are, however, unlikely to have a major impact on the benefit-cost ratio because most the public sector expense is for the clinical component of the program.

This study also assumed that each province would fund the bridging program and an expansion in the number clinical placements available to IEMLTs. There are, however, some good reasons why federal funding for this initiative would be appropriate. The first is that qualified MLTs can work anywhere in the country. Some graduates would find employment in provinces other than the one they graduated in. Having one or two provinces shoulder the cost of training the whole country's MLTs is clearly not fair. The second reason is that the federal government also benefits financially from increased economic activity and is a partner with the provincial governments in funding programs for immigrants and healthcare.

While the economic impacts are small, they are also unambiguously positive for the economy, governments, and our immigrant community. Initiatives to promote the integration of new immigrants into Canadian society and to allow them to achieve their full potential deserve a high priority on the public agenda.



## Appendix: C<sub>4</sub>SE Provincial Modeling System

The C<sub>4</sub>SE's Provincial Modeling System is a dynamic multi-sector regional economic model of the country. This system includes a set of bottom up macroeconomic models for the provinces plus a combined territories and rest of world model. A national model then links economic activity in one region with activity in the other regions. This model includes detailed income and expenditure categories and demographic and labour market information. The purpose of the model is to produce medium to long-term projections of the provincial economies and conduct simulation studies that require industry and demographic detail.

The modeling system is used to produce the C<sub>4</sub>SE's Provincial Economic Service semi-annual forecasts and was used in preparing the following recent reports:

- The Centre for Spatial Economics, *Made in Ontario: The Case for Sales Tax Harmonization*. Toronto, ON: Ontario Chamber of Commerce; 2009.
- The Centre for Spatial Economics, *The Economic Impact of the Detroit Three Auto Manufacturers in Canada*. Toronto, ON: Ontario Manufacturing Council; 2008.
- The Centre for Spatial Economics, *The Economic Cost of Wait Times in Canada*. Ottawa, ON: Canadian Medical Association; 2008.

The modelling system consists of a set of provincial and territorial macroeconomic models that are linked through trade, financial markets and inter-provincial migration. The impact on the supply chain – in terms of output and employment – is fully captured by the multi-sector model, which incorporates the purchasing patterns from the current input-output tables. But, in contrast to an input-output model, a dynamic macroeconomic model also considers the impact on supplier's investment decisions that occur as a result of the change in economic activity.

The model produces impacts on employment, labour income, value added output, productivity, investment and exports for at least fourteen industry sectors (see list below). It also produces the impacts on government revenue by level of government and source of revenue. The dynamic nature of the model, however, makes it more challenging to develop a single summary measure that provides a “rule-of-thumb” result characterizing the permanent, long-run impact on the economy. The need for such a measure is satisfied by generating a long-run average impact over the first decade or more of the simulation.

### C<sub>4</sub>SE Model – Industry Sectors

Agriculture	Finance, Insurance & Real Estate
Other Primary (detail varies by province)	Professional, Scientific & Management Services
Manufacturing (detail varies by province)	Accommodation & Food
Construction	Health Services
Utilities	Other Services
Transportation & Warehousing	Education Services
Trade	Government Services

The following sections provide the reader with more information on the structure of the individual provincial models and the national model that unites the provincial and territorial models.



## **Provincial Models**

The provincial and territorial models are very similar in structure – the parameters in each model differ to reflect differences in the economic experience of each region.

The provincial models are similar in nature to a general equilibrium model, but full product and factor substitution is not implemented. At present, substitution is restricted to the energy products and value-added. For purposes of manageability the model does not consider the impacts of changes in relative labour and capital costs across industry categories. There is only one wage rate and one set of cost of capital measures – construction and equipment – in the model.

Changes in these measures of labour and capital costs cause labour and capital intensities to change across all sectors of the economy.

The model's economy is organized into four broad sectors. Firms employ capital and labour to produce a profit-maximizing output under a Cobb-Douglas constant-returns-to-scale technology. Households consume the domestic and foreign products and supply labour under the assumption of utility maximization. Governments purchase the domestic and foreign products and produce output. Foreigners purchase the domestic product and supply the foreign product.

There are two main markets in the model. These markets correspond to the domestic and foreign products and the labour market. Each of these markets is concerned with the determination of demands, supplies, and prices. Like most sub-national models, the Ontario model assumes that most prices are set in national markets. The presence of the National model in the system means that interest rates, exchange rates and the price of some goods and services are affected by changes in economic activity in Ontario and the rest of the country.

In sub-national economies, the movement of labour is a key factor in the adjustment of the local economy to changes in economic conditions. The C<sub>4</sub>SE's model allows net migration – and therefore the total population – to adjust over time to reflect changes in economic conditions. If the economy and employment is growing, then the demand for labour rises and net migration rises. This feature is an important consideration when examining economic impacts over one or more decades.

## **National Model**

The presence of the national model is what makes the C<sub>4</sub>SE's system unique. The national block adds up the economic activity across the country and uses this information to help determine prices, interest rates, exchange rates and the rest-of-country external demand for goods and services – all factors that are exogenous to other provincial modelling systems.

To see why this is important, consider an increase in one province's economy. This raises that province's demand for imports. In this system each of the other provinces sees an increase in demand for their exports to that province which, in turn, raises their own economies. The increase in economic activity will put upward pressure prices, interest rates and the exchange rate. The entire national economy, therefore, adjusts over time to the initial shock.

