

Medical Laboratory Professionals' Association of Ontario

Call to Action: Investing in Laboratory Health Human Resources

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Call to Action: Investing in Laboratory Health Human Resources

Ontario is experiencing a rapidly accelerating shortage of medical laboratory technologists (MLTs). 70% of medical decisions rely on laboratory results.¹ Medical laboratories impact all aspects of patient care, from emergency rooms to family medicine to mental health. Every sample—COVID-19 swabs taken in pharmacies, blood drawn in doctor's offices, tumors extracted during surgery—is processed and analyzed by an MLT. **This information keeps Ontarians healthy and out of the hospital.**

MLTs conduct 244.8M lab tests annually² for 14.7M Ontarians. COVID-19 added 16+M PCR tests. With an aging population and expansions to preventative medicine, testing demand is increasing by 4% annually (more than double the predicted increase of 1.8%).³

Through COVID-19, we experienced how MLT shortages affect laboratory testing. Despite working long hours short-staffed, we never reached the 100,000 target, only getting as high as 76,472. Investments in instrumentation are limited when MLT numbers stay the same.

6203 practicing MLTs shoulder this testing demand.⁴ This workforce has been declining for decades:

- 70% of labs entered COVID-19 short-staffed.⁵
- 41% of practicing MLTs eligible to retire within 2-4 years.⁶
- 87% of medical laboratory professionals experiencing burnout working 24/7 through COVID.
- 42% anticipating leaving field/early retirement, or stress/sick leave (42%).⁷
- A cycle of shortages, increased workload, burnout, turnover worsens this HHR crisis.⁸
- Significant shortfall between current shortage (466) and new MLTs entering the market (291).

Human health resources shortages mean delays in turnaround time (TAT), lengthened hospital stays, and duplicate appointments with family doctors. Without intervention, ongoing **MLT shortages could cost taxpayers over \$1.6 billion dollars annually** and negatively impact patient health.

3-Phase Approach - \$6.2M over 4 years

We are calling on the Ontario government to invest in our people and our labs immediately.

We propose the following:

- ❑ **Phase 1 – 2022-2025: Laboratory Externship Program – \$3.6M** (total over 3 years)
Clinical placements (externship) are a major roadblock for both laboratories and training programs, making this a target area to alleviate MLT shortages. Labs are not able to take on students due to their staffing shortage. Schools are not able to take on more students due to lack of externships. This funding is needed immediately.
- ❑ **Phase 2 – 2023-2026: Northern Health Program - Laboratory - \$2.6M** (total over 3 years)
Rural and remote areas are most impacted by this shortage, necessitating a targeted recruitment and retention strategy to support healthcare in these communities.
- ❑ **Phase 3 – 2024: Develop Ontario Simulation Laboratory**
Further research currently being conducted to determine capital investment required.

Efficient laboratory services improve patient care provision and save taxpayers money. This modest proposal supports the government's aim to end hallway medicine and will avert \$1.6 billion annually in lengthening hospital stays and increasing wait times. Our investment plan outlines cost-efficient, data-driven solutions to this health human resource crisis with high return on investment (ROI).

Background: Health Human Resource Shortage

Demand for laboratory testing is increasing but practicing MLTs are decreasing.

Shortages of MLTs have been increasing each year since 7 training programs were closed in the 1990s by the then-NDP government under the assumption that instrumentation upgrades would reduce future need for MLTs. While new technology has created more efficient processes, MLTs remain essential to interpret test results, validate and maintain equipment, and more.

OPEN POSITIONS VS NEW MLTs



With an aging population, expansion of preventative medicine, and new pathogens; demand is only increasing for laboratory testing. Even prior to COVID-19, the annual increase in Ontario was 4% (more than double the projected rate of 1.8% annually).⁹

Data from the Ministry of Labour, Training and Skills Development (MLTSD) indicates a concurrent increase in MLT postings at a rate of 16.68% in the last 5 years.¹⁰ Recent data from laboratory employers reflects this change, with **466 open MLT positions** reported by 120 worksites.¹¹ With 291 new applicants to the College of Medical Laboratory Technologists of Ontario (CMLTO) in 2020¹² to fill those open positions, the current demand far exceeds supply. 66% of laboratories reported positions remaining **unfilled for more than 3 months**.¹³

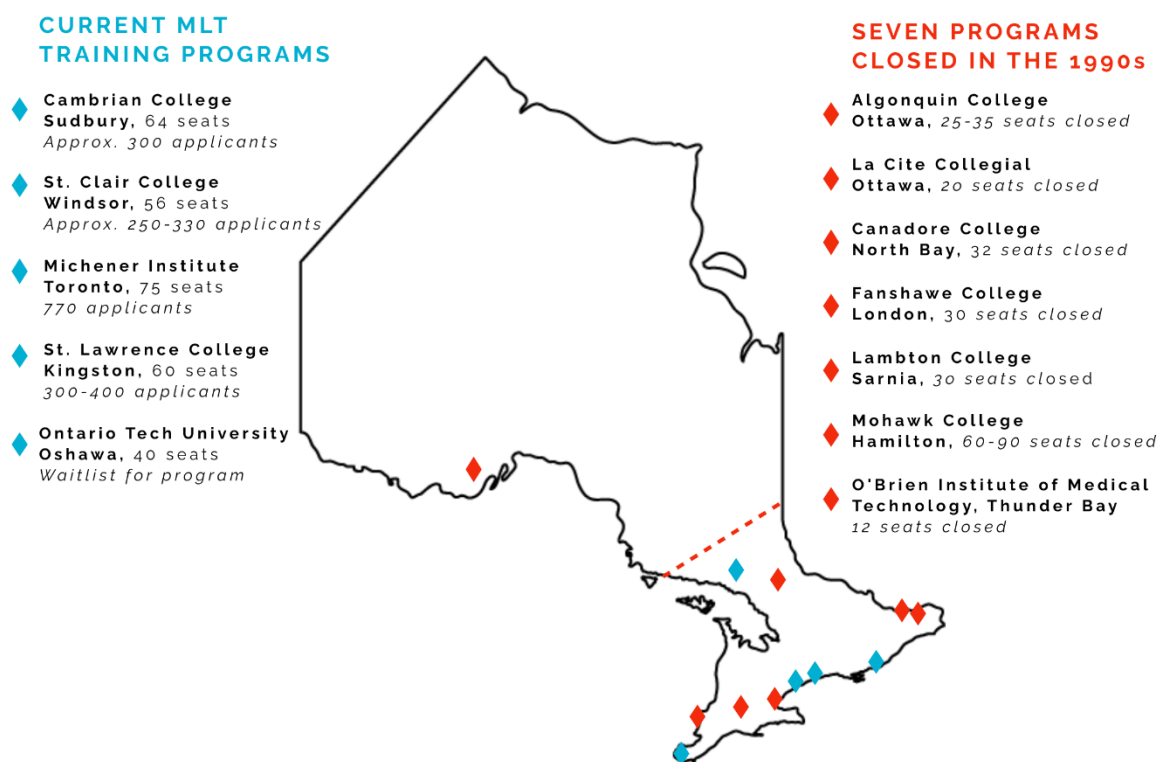


Figure 1- Map of Ontario showing closed MLT programs. Cambrian College serves Northern Ontario above the dotted red line.

Background: MLT Training - Clinical Placements Required to Expand

	To become an MLT, students must study full-time in an accredited, post-secondary Medical Laboratory Science program for 2.5 – 4 years. After graduating, candidates must pass a certification exam with the Canadian Society of Medical Laboratory Science (CSMLS) and register with the College of Medical Laboratory Technologists of Ontario (CMLTO).
5 programs remain, highly competitive.	Only 5 Medical Laboratory Science programs remain. These constitute Cambrian College (Sudbury), St. Lawrence College (Kingston), St. Clair College (Windsor), and Ontario Tech University (Oshawa); funded by the Ministry of Training Colleges and Universities (MTCU), and the Michener Institute (Toronto); funded by the Ministry of Health (MOH). All 5 schools receive far more applications than they have available seats.¹⁴ All 4 colleges (Ontario Tech University is not included in this dataset) are designated on the OntarioColleges.ca website as “highly competitive;” for comparison there are 7 highly competitive and 221 non-competitive programs for PSWs in Ontario, and 7 highly competitive and 4 non-competitive programs for Medical Radiation Technologists.¹⁵
Ontario programs remain the main source of new MLTs.	Currently, 58% of applicants to the CMLTO recently completed a training program, 16% were trained in Ontario but graduated before the current year, 14% were internationally educated MLTs, and 12% trained in other provinces.¹⁶ Provincial training programs provide approximately 74% of all MLTs in our province and essential to increasing MLT workforce supply.
Clinical placement availability restricts program expansion.	MLT programs indicate uncertainty about clinical placements, where students finalize training in a professional laboratory environment, as a significant barrier to increasing seats.¹⁷ Without more spots in professional labs, programs are unable to expand.

TRAINING ROAD BLOCKS



Figure 2 - Showing the two major training roadblocks for MLT students entering the field.

Phase 1 – 2022-2025: Laboratory Externship Program

Cycle of shortages: placements, student seats, and practicing MLTs.

Employers struggle to commit resources to training clinical placement students while understaffed. This limits placement sites, restricting seats in MLT programs, which in turn reduces numbers of practicing MLTs, intensifying the staffing shortage.

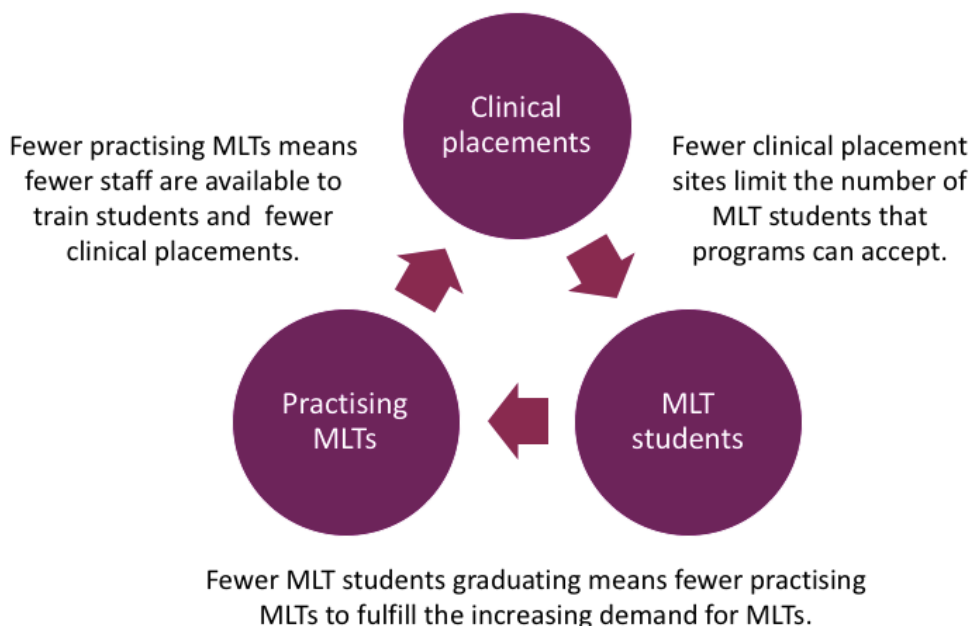


Figure 3 - Judy Tran, "Clinical Placements and the Shortage of Medical Laboratory Technologists," (July 2021). Reproduced with author's consent.

Dedicated funding supports preceptors and other costs.

Laboratories identified staffing shortages, burnout, lack of placement preceptors, laboratory space and resources, and other factors as barriers to accepting students. Dedicated funding would provide short-term support in these areas as a stopgap measure for longer-term solutions.¹⁸

Our proposal is that the government fund a temporary Laboratory Externship Program equivalent to the current Nursing Externship Program which will provide support to laboratory employers in hiring clinical placement students. Research indicates a payment of \$6,000/student is standard to offset professional development, laboratory operations, clinical placement preceptors, and other costs associated with taking on trainee MLTs.¹⁹

Phase 2 – 2023-2026: Northern Health Program - Laboratory

Rural and remote areas most impacted by MLT shortage.

Rural and remote communities are particularly impacted by the shortage in this workforce. 24% of postings for all MLTs across Ontario are in rural and remote labs,²⁰ despite rural populations representing just 13.8% of the total population of Ontario.²¹ Because this number does not include laboratories located in cities but serving rural and remote catchment areas (such as Thunder Bay, Sault Ste. Marie, Sudbury, Guelph, London, Niagara, or Chatham) the impact could be even higher.

Small lab teams make a shortage of even 1 MLT significant.

This rate is particularly stark given small staff sizes of labs in these areas, with an average staff size of 16 team members in a Rural and Remote lab (inc. Management) compared to *140 team members in Mid-Size and Large Urban Centers*. Labs are hiring for 22% of total MLT staff on average in these areas.

With just 2-5 laboratory professionals covering services for their entire hospital, the smallest labs struggle hardest with shortages. For example, the lab at Lady Dunn Health Centre (serving a catchment area of 4300 people in Northern Ontario including Dubreuilville, Hawk Junction, Michipicoten First Nation, Michipicoten Township-Wawa, Missanabie, and White River) is hiring 1 Full-Time MLT. Their lab team of 1 Manager, 2 MLTs, and 1 MLA/T is missing 50% of their MLT staff.

Rural Ontario communities are growing and aging.

COVID-19 has accelerated a population shift from larger urban centres to smaller towns and rural areas. According to Statistics Canada, Toronto's census metropolitan area (CMA) decreased by 50,375 from July 1, 2019 to July 1, 2020. Hot real estate markets in major cities are leading seniors to retire early and move to smaller towns.²² Statistics Canada indicates more rural CMAs had a much higher percentage of the population aged 65 years and older; in Toronto the 65+ population was 15.3% compared to 21% in Thunder Bay and 23.2% in Peterborough.²³ Seniors have an increased need for laboratory testing to monitor and assess health conditions.²⁴

Recruitment and retention difficult for rural and remote laboratories.

Recruitment is difficult in these areas. Clinical placements, the portion of MLT programs where students finalize training in a professional laboratory environment, can be a significant recruitment method for many laboratories. However, due to the consolidation of microbiology and histology/ pathology laboratories, many rural labs are unable to provide required training in all five disciplines.²⁵ Completing a placement across multiple rural laboratories becomes too costly and students have difficulty finding short-term housing, so rural and remote labs often lose students to larger urban hospitals.

Similarly, laboratories require resources and incentives to convince qualified MLTs (both those trained in Canada and internationally educated) to leave family and connections in urban Ontario. Recruitment and retention support for students and registered MLTs would support laboratory service provision in rural and remote communities.

Phase 3 – 2024: Develop Ontario Simulation Laboratory

Simulation training augments and shortens clinical placement times.

While funding for clinical placements can be a short-term solution, clinical simulation is a more sustainable long-term goal. Simulation training allows for shorter clinical placement timelines, as well as removing the burden of additional training work on clinical sites. Simulation learning in the summer preceding clinical placements has allowed Michener to significantly shorten their length from 30 weeks to 20 weeks.²⁶ Current research shows that replacing clinical placements with simulation learning in nursing does not significantly impact competency or knowledge acquisition.²⁷

Centralized training enables rural and remote labs to hire students, aiding in recruitment.

An Ontario Simulation Laboratory (OSL) could include professional proctors, inter- and intra-professional role playing, standardized patients, rubber arms to practice blood draws, simulation of specimen identification, and more.²⁸ Situated in a centralized location, the OSL would fill learning gaps in the required 5 disciplines, allowing rural and remote laboratories to hire students, and supporting recruitment in these communities. By shortening clinical placement time and removing the training burden on medical laboratories, it would also alleviate the MLT shortage crisis.

Judy Tran's research document "Clinical Placements and the Shortage of Medical Laboratory Technologists" outlines a detailed account of the shortage and its complicating factors - document enclosed in submission.



Return on Investment

Averted Costs = \$1,572,000,000+ Annually

Efficient laboratory services improve patient care provision and save taxpayers money. MLTs provide information to treat patients, catch and monitor conditions before they become dangerous, and keep Ontarians healthy and out of the healthcare system.

However, shortages of MLTs will continue to cause turnaround time (TAT) delays within hospitals and family practices. This will result in unexpected costs to the Ontario Healthcare System as well as negatively impacting patient health.

Lengthening Hospital Stays - \$904M: Without an adequate MLT workforce, hospital stays will increase in length due to longer TATs. The cost of a standard hospital stay in Ontario is \$5642/patient²⁹ with an average of 7.0 days.³⁰ At a rate of \$806/day, even a 1-day increase could cost the province \$904,220,772 (calculating with CIHI's hospitalization rate for Ontario of 1,121,862 for 2019-2020).³¹ Increasing wait-times could also increase risk of healthcare-acquired infections like *C. difficile*.

Duplicate Family Practice Appointments - \$123M: Shortages will extend TAT for tests, meaning duplicate family practice visits. Health Quality Ontario (HQO) found that 1 in 8 respondents reported test results were not available at the time of their scheduled appointment with their provider. Delayed tests can affect patient care, as well as wasting time and resources.³² Every visit to a family practitioner is charged to OHIP at a rate of \$74.05 per patient,³³ potentially costing the province \$123M (calculating for 90.6% of Ontarians with a regular healthcare provider relative to the HQO statistic).³⁴

Potential for Error Increases - \$545 M: Laboratory professionals do everything they can to get the job done. However, MLT shortages affect the lab's ability to function and provide accurate results. A lab team working short must focus only on processing tests. No staff hours dedicated to ensuring instrumentation accuracy and quality assurance combined with 87% of MLTs experiencing burnout leads to an increase in potential for error.

Data does not exist for this financial impact specifically for Ontario medical laboratories. A 2019 study of the total impact of hospital harm in Ontario published in the Canadian Medical Association Journal estimated \$1,088,330,376.³⁵ 50.1% of patients were harmed by improper treatment, including failure to make the correct diagnosis or an incorrect diagnosis leading to incorrect treatment.³⁶

Aging Populations - Exponential: While the impact of delays on the healthcare system is already significant, Ontario's aging population makes delays even more expensive. Our average annual healthcare expenditure for a 50-year-old is \$3100, \$6400 for a 65-year-old, and \$22,000 for an 85-year-old.³⁷ As noted above, rural and remote areas are experiencing an influx of seniors, making care in these communities more urgent than ever.

Proposed Investment – \$6,200,000 (over 4 years)

A comparably small investment into laboratory externships and Northern Health Programs will deliver a large return and save the province millions in delays and service provision to rural and remote areas.

❑ **Phase 1 - 2022-2025: Laboratory Externship Program – \$3.6M (over 3 years)**

Develop Laboratory Externship Program using current Nursing Externship Program as an example to support to public and private laboratory employers in hiring clinical placement students for 3 years - \$6000/student for 200 students. Funds could be transferred through existing systems from the Ministry of Health to the partner facility.

❑ **Phase 2 – 2023-2026: Northern Health Programs – Laboratory - \$2.6M (over 3 years)**

Develop Northern Health Program for Laboratory Services. Examples of existing initiatives include the Northern and Rural Recruitment and Retention Initiative (NRRR) Northern Physician Retention Initiative (NPRI), Rehabilitation Professionals Incentive Grant, Tuition Support Program for Nurses (TPSN), and Community Assessment Visit Program. These would provide recruitment initiatives and tuition support for MLTs and MLT students working in rural and remote areas, relative to Rurality Index Ontario (RIO) score.³⁸

- **Laboratory Professionals Incentive Grant - \$.5M annually:** As a model, the closest equivalent program is the taxable incentive grant to rehabilitation professionals establishing their practice in Northern Ontario. This grant would provide medical laboratory technologists with job offers in rural and remote areas with grants of up to \$5,000 per eligible year to a maximum of \$15,000 paid over a three-year period (calculating for 100 MLTs – currently 85 open positions in Northern Ontario).
- **Tuition Support Program for MLTs - \$.3M annually:** Develop Tuition Support Program for new graduate MLTs choosing a return-of-service in an eligible community with a RIO score of 40 or greater, based on Tuition Support Program for Nurses. This program would be open to MLTs registered with the CMLTO applying within one year of graduating from an Ontario university or college. For every year of tuition reimbursed, the applicant must work minimum 1500 hours within a 12-month period full-time or 24 months permanent part-time (calculating \$7000 tuition/40 MLT students (50 students per cohort at Cambrian College in Sudbury).
- **Community Assessment Visit - \$50,000 annually:** Expand Community Assessment Visit program to include MLTs. This would offer reimbursement for travel and accommodation expenses incurred by MLTs and their spouse for purposes of assessing practice opportunities in an eligible community on the RIO list (accommodation (\$250 for three nights) + travel ((300km x 2) – 100 km x 0.41 = \$205.00) x 100 MLTs).

❑ **Phase 3 - 2024: Develop Ontario Simulation Laboratory**

Further research will be done to develop a plan for an Ontario Simulation Laboratory. A one-time capital expenditure investment by the MOH and MLTC would enable a centralized simulation lab accessible by all Ontario MLT programs to support training in all 5 required disciplines.

Supporters

The following hospitals, associations, laboratories, and organizations support this Call to Action.

Association of Ontario Midwives
Bluewater Health
Brant Community Healthcare System
British Columbia Society of Medical Laboratory Science
Cambridge Memorial Hospital
Canadian Society for Medical Laboratory Science
Children's Hospital of Eastern Ontario
Denturist Association of Ontario
Dynacare
Eastern Ontario Regional Laboratory Association
Guelph General Hospital
Hamilton Health Sciences
Hamilton Regional Laboratory Medicine Program
Joseph Brant Hospital
LifeLabs
London Health Sciences Centre
Medical Laboratories of Windsor
Med-Health Laboratories Inc.
Niagara Health
North Bay Regional Health Centre
Nurse Practitioners Association of Ontario
Ontario Association of Medical Laboratories
Ontario Association of Mental Health Professionals
Ontario Association of Pathologists
Ontario Dental Association
Ontario Dental Hygienists Association
Ontario Hospital Association
Ontario Kinesiology Association
Ontario Nurses' Association
Ontario Opticians Association
Ontario Podiatric Medical Association
Ontario Society of Chiropodists
Ordre Professionnel des Technologistes Médicaux du Québec
Pathology and Laboratory Medicine - London Health Sciences Centre & St. Joseph's Health Care
London
Peterborough Regional Health Centre
Respiratory Therapy Society of Ontario
St. Joseph's Healthcare Hamilton
Sunnybrook Health Sciences Centre
Thunder Bay Regional Health Sciences Centre
Werfen
WeRPN – Registered Practical Nurses Association of Ontario





- ¹ Centers for Disease Control and Prevention, Division of Laboratory Systems, “Strengthening Clinical Laboratories,” <https://www.cdc.gov/csels/dls/strengthening-clinical-labs.html>.
- ² [Laboratory Services Expert Panel, November 12, 2015.](#)
- ³ Judy Tran, “Clinical Placements and the Shortage of Medical Laboratory Technologists,” MLPAO (July 2021), page 11.
- ⁴ CMLTO, “Medical Laboratory Technologists: 2020 Health Human Resource Report,” Registration Statistics Report, March 2021, page 7, http://www.cmlto.com/images/stories/Resources/CollegePublications/ResearchReportsPositionStatementsWhitePapers/2020_mlt_hhr_rprrt_fnl.pdf
- ⁵ Based on a survey of lab leaders and professionals in May 2020.
- ⁶ CMLTO, “Medical Laboratory Technologists,” page 7. Assumes retirement eligibility at 55.
- ⁷ Based on a survey of medical laboratory professionals in April 2021.
- ⁸ Tran, “Clinical Placements,” page 13.
- ⁹ Ibid., page 11.
- ¹⁰ Ibid., page 11-12.
- ¹¹ Based on a survey of lab leaders and professionals in Spring 2021.
- ¹² CMLTO personal communication, February 2021 - MLTs who completed exam this year, previous years, and IEMLTs.
- ¹³ Data self-reported by 120 laboratory workplaces – see our brief “MLPAO MLT Shortage Report – Spring 2021.”
- ¹⁴ Tran, “Clinical Placements,” page 27.
- ¹⁵ OntarioColleges.ca, “Find a Program,” date accessed: July 7, 2021.
- ¹⁶ Tran, “Clinical Placements,” page 31-32.
- ¹⁷ Ibid., page 32.
- ¹⁸ Ibid., pages 40-41.
- ¹⁹ Ibid., page 39.
- ²⁰ Based on a survey of lab leaders and professionals in Spring 2021.
- ²¹ Weseem Ahmed, “Measuring Ontario’s Urban-Rural Divide,” *Ontario 360*, 13 November 2019, <https://on360.ca/policy-papers/measuring-ontarios-urban-rural-divide/>.
- ²² Jason Kirby, “The Great (New) Migration: How the Pandemic Is Pushing Canadians Out of Big Cities,” *Zoomer*, My 1, 2021, <https://www.everythingzoomer.com/money/2021/05/01/migration-how-the-pandemic-is-pushing-canadians-out-of-big-cities/>
- ²³ Statistics Canada, “Canada’s population estimates: Subprovincial areas,” July 1, 2020, <https://www150.statcan.gc.ca/n1/daily-quotidien/210114/dq210114a-eng.htm?HPA=1>.
- ²⁴ Barna Vászárhelyi and Lóránd A. Debreczeni, “Lab Test Findings in the Elderly,” *eJIFCC*, 19 December 2017, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5746841/>.
- ²⁵ “Report to the MLPAO: MLT Human Resource Crisis,” AiCon Inc, 2019, Tran, “Clinical Placements,” page 50.
- ²⁶ Tran, “Clinical Placements,” pages 35-36.
- ²⁷ Ibid, page 48.
- ²⁸ Ibid, page 49.
- ²⁹ Canadian Institute for Health Information, “2019-2020: Cost of a Standard Hospital Stay (Dollars),” [https://yourhealthsystem.cihi.ca/hsp/inbrief?lang=en#/indicators/015/cost-of-a-standard-hospital-stay/mapC1:mapLevel2:trend\(C1.C5001\)/](https://yourhealthsystem.cihi.ca/hsp/inbrief?lang=en#/indicators/015/cost-of-a-standard-hospital-stay/mapC1:mapLevel2:trend(C1.C5001)/)
- ³⁰ Canadian Institute for Health Information, “Inpatient Hospitalization, Surgery and Newborn Statistics, 2019–2020: ALC volumes and days,” 29 April 2021, <https://www.cihi.ca/en/hospital-stays-in-canada>.
- ³¹ Ibid.
- ³² Health Quality Ontario, *Measuring Up 2018*, page 24, <https://www.hqontario.ca/Portals/0/Documents/pr/measuring-up-2018-en.pdf>.
- ³³ Ministry of Health, “Schedule of Benefits: Physician Services Under the Health Insurance Act,” 11 February 2021, https://www.health.gov.on.ca/en/pro/programs/ohip/sob/physserv/sob_master20210314.pdf
- ³⁴ Statistics Canada, “Primary health care providers, 2019,” 22 October 2020, <https://www150.statcan.gc.ca/n1/pub/82-625-x/2020001/article/00004-eng.htm>
- ³⁵ Tessier et al, “The impact of hospital harm on length of stay, costs of care and length of person-centred episodes of care: a retrospective cohort study,” *CMAJ* (12 August 2019 191:32), page E883, <https://www.cmaj.ca/content/cmaj/191/32/E879.full.pdf>.
- ³⁶ Dr. Brian Goldman, “The harm to hospitalized patients cost Ontarians more than \$1B a year: study,” *CBC Radio*, 12 August 2019, <https://www.cbc.ca/radio/whitecoat/the-harm-to-hospitalized-patients-cost-ontarians-more-than-1b-a-year-study-1.5243458>
- ³⁷ Financial Accountability Office of Ontario, “Ontario Health Sector: 2019 updated assessment of Ontario health spending,” 6 March 2021, <https://www.fao-on.org/en/Blog/Publications/health-update-2019>.
- ³⁸ Northern Health Programs, “Communities by Rurality Index for Ontario (RIO) Score,” Accessed 14 July 2021, https://www.health.gov.on.ca/en/pro/programs/northernhealth/rio_score.aspx.



For further information, please contact

Michelle Hoad, Chief Executive Officer

416-485-6768 | mhoad@mlpao.org | mlpao.org