

Sanjay K. Rai, Ph.D., Secretary of Higher Education
Maryland Higher Education Commission (MHEC)
6 N. Liberty Street, 10th Floor
Baltimore, MD 21201

January 15, 2025

Dear Dr. Rai:

On behalf of the University of Maryland, Baltimore please find attached our proposal to establish a new Academic Program, *Master of Science in Trauma Sciences*, within the School of Graduate Studies. This proposed academic program is being simultaneously submitted for approval to the University of Maryland Board of Regents.

UMB's proposed M.S. in Trauma Sciences is designed to enhance the education of healthcare professionals who care for injured patients and engage in or study trauma systems. This program is a collaboration between the University of Maryland School of Graduate Studies and the R Adams Cowley Shock Trauma Center and will be the first of its kind in the United States. This 30-credit online program is designed for individuals interested in working in healthcare: surgeons, anesthesiologists, nurses, operating room personnel, and allied healthcare workers. The degree provides students with the education and concrete training needed to engage with and respond to issues of critical illness, injury, and trauma.

Currently, many healthcare professionals in trauma, emergency medicine, and trauma critical care receive much of their training through on-the-job, "just-in-time" learning. The program also aims to provide non-physician professionals with access to educational resources that will strengthen their ability to contribute as essential members of the multidisciplinary teams required to deliver optimal trauma care.

Should you require additional information, please contact Meghan Bruce Bojo at mbojo@umaryland.edu or 410-706-2055.

Regards,



Dr. Roger J. Ward, JD, MSL, MPA
Provost and Executive Vice President



Office Use Only: PP#

**Cover Sheet for In-State Institutions
New Program or Substantial Modification to Existing Program**

| | |
|---------------------------------|-----------------------------------|
| Institution Submitting Proposal | University of Maryland, Baltimore |
|---------------------------------|-----------------------------------|

Each action below requires a separate proposal and cover sheet.

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|---|---|
| <input checked="" type="radio"/> New Academic Program | <input type="radio"/> Substantial Change to a Degree Program |
| <input type="radio"/> New Area of Concentration | <input type="radio"/> Substantial Change to an Area of Concentration |
| <input type="radio"/> New Degree Level Approval | <input type="radio"/> Substantial Change to a Certificate Program |
| <input type="radio"/> New Stand-Alone Certificate | <input type="radio"/> Cooperative Degree Program |
| <input type="radio"/> Off Campus Program | <input type="radio"/> Offer Program at Regional Higher Education Center |

| | | | |
|--|---|----------------|--------------------|
| Payment <input checked="" type="radio"/> Yes | Payment <input checked="" type="radio"/> R*STARS # JE313880 | Payment | Date |
| Submitted: <input type="radio"/> No | Type: <input type="radio"/> Check # JE313880 | Amount: 850.00 | Submitted: 9/12/24 |

| | | | |
|---|--|--------------|--|
| Department Proposing Program | University of Maryland School of Graduate Studies | | |
| Degree Level and Degree Type | Master of Science | | |
| Title of Proposed Program | M.S in Trauma Sciences | | |
| Total Number of Credits | 30 | | |
| Suggested Codes | HEGIS: 1212.99 | CIP: 51.9999 | |
| Program Modality | <input type="radio"/> On-campus <input checked="" type="radio"/> Distance Education (fully online) <input type="radio"/> Both | | |
| Program Resources | <input checked="" type="radio"/> Using Existing Resources <input type="radio"/> Requiring New Resources | | |
| Projected Implementation Date <small>(must be 60 days from proposal submission as per COMAR 13B.02.03.03)</small> | <input checked="" type="radio"/> Fall <input type="radio"/> Spring <input type="radio"/> Summer Year: 2026 | | |
| Provide Link to Most Recent Academic Catalog | URL: https://www.graduate.umaryland.edu/academics/course-information/ | | |

| | | |
|-------------------------------------|--------|---|
| Preferred Contact for this Proposal | Name: | Meghan Bruce Bojo |
| | Title: | Executive Director, Academic Administration |
| | Phone: | (410) 706-2055 |
| | Email: | mbojo@umaryland.edu |

| | | |
|---------------------------|------------|------------------|
| President/Chief Executive | Type Name: | Dr. Roger Ward |
| | Signature | Date: 01/15/2025 |

| | |
|--|--|
| | Date of Approval/Endorsement by Governing Board: |
|--|--|

Revised 1/2021

**A PROPOSAL FOR A NEW ACADEMIC PROGRAM at THE UNIVERSITY OF
MARYLAND, BALTIMORE FOR A MASTER OF SCIENCE IN TRAUMA SCIENCES**

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A. Centrality to Institutional Mission and Planning Priorities:

1. Provide a description of the program, including each area of concentration (if applicable), and how it relates to the institution's approved mission.

The University of Maryland, Baltimore (UMB) School of Graduate Studies (SGS) submits this proposal to create a two-year Master of Trauma Sciences program. This program will be sponsored within the SGS and supported by the R Adams Cowley Shock Trauma Center (STC). This will be an online, 30-credit program, with one clinical elective course offered in-person. The proposed degree will train students in the clinical science and systems of care for the physically injured trauma patient. The audience includes national and international students who have a trauma-focused career, including but not limited to physicians, advanced care practitioners, nurses, emergency medical staff, medical trainees, and researchers.

The curriculum for the proposed M.S. in Trauma Sciences is informed by competencies and standards set forth by the R Adams Cowley Shock Trauma, the American College of Surgeons, the American Association for the Surgery of Trauma, the European Society for Trauma and Emergency Surgery, the International Association for Trauma and Surgical Critical Care, and the World Health Organization Global Emergency and Trauma Care Initiative. The R Adams Cowley Shock Trauma Center (STC) in Baltimore is a world recognized leader in the care of the injured patient and an ideal site for a master's degree in Trauma Sciences.

STC cares for over 7,000 injured patients every year and is deeply integrated with UMB's academic medical center, both through its central location on campus and its alignment with UMB's mission to serve the public good of Maryland and society as a whole. STC is the Primary Adult Resource Center (PARC) for trauma in Maryland, and serves severely injured and critically ill patients across the state of Maryland. There is a wealth of trauma knowledge at STC and extensive experience in didactic education offered to on-site Surgical Critical Care Fellows and Senior Residents in General Surgery.

Over 350 residents and 40 fellows from greater than 35 surgical training programs participate in rotations through STC per year, seeking to experience a wide variety of complex traumatic pathology. STC trains residents and fellows from the disciplines of general surgery, emergency medicine, anesthesia, internal medicine, neurology, pediatric critical care, and interventional radiology. Most residents, however, are from general surgery and emergency medicine programs at small, community hospitals and many intend to practice in rural or suburban settings. These physicians will serve as the frontline of trauma care in low-resource settings with limited personnel, requiring a strong foundation of knowledge to treat patients effectively and efficiently. The proposed master's program will extend training to other team members beyond current residents and fellows.

The seminal studies on shock and the care of multiple injured patients done at STC contributed to the development of the concept of the “Golden Hour” that has guided care of the physically injured trauma patient around the world for over 50 years. The course “Trauma: The First Hour” was created to provide standardized, consistent education for those rotating at STC. It consists of ten modules, and each reflects the immediate care of patients who present to a trauma center within the first hour of their arrival. Experts who work at STC filmed didactic lectures that are anywhere from five and 30 minutes about relevant topics. Each module has one to three didactic videos, a short quiz, resources from the trauma literature, and an evaluation. These are done asynchronously, but are mandatory for the rotation. Since implementing this course, residents have consistently evaluated it as one of the best parts of their rotation. Feedback has been consistently positive, highlighting that the course has raised and standardized the level of education provided. Given the positive response of this pilot and feedback, an infrastructure and team necessary to create online, asynchronous training in trauma care has already been established and will be built upon for the Master in Trauma Sciences.

Trauma care education has traditionally involved in-person training, lectures, and symposia. This proposed online academic program, the first of its kind, is intended to expand the reach of didactic education in the clinical science of trauma care and trauma systems. This new program will provide learners with training to provide better clinical care and systems management without the traditional barriers of time, distance, and scheduling limitations of in-person programs. In so doing, this program will enable UMB to improve care of injured patients throughout Maryland and beyond.

2. Explain how the proposed program supports the institution’s strategic goals and provide evidence that affirms it is an institutional priority.

UMB has a long history as an academic leader in trauma care and research and the development of trauma care systems. The M.S. in Trauma Sciences will continue this tradition of excellence and enhance the reach of UMB’s impact to a more geographically diverse audience. The proposed program will be the only program in the United States with an academic focus on the science of trauma and trauma systems of care extending from prevention and prehospital care to rehabilitation and reintegration. The graduates of this program will be uniquely prepared for advancing trauma care as well as assuming leadership positions in trauma systems.

This program directly aligns with two UMB strategic plan themes: Student Growth and Success and Global Engagement and Education. It provides education to enhance clinical care of trauma patients that is accessible to working professionals who would otherwise be limited by the bounds of geography and availability. Additionally, this program will be the only graduate program in the United States with a specific academic focus on research and scholarship on trauma systems and clinical care. The online learning platform provides a unique opportunity for health system leaders in countries with new or developing trauma programs to enhance their programs with evidence-based standards of care. This new program creates opportunities for academic collaboration across departments, schools, and campuses within the State of Maryland, as well as nationally and internationally.

3. Provide a brief narrative of how the proposed program will be adequately funded for at least the first five years of program implementation.

The proposed program will be well-resourced as there is an already existing faculty and strong foundation in education and training to support the proposed M.S. in Trauma Sciences. STC and the UMB SGS have the capacity to offer the proposed degree program within existing resources.

4. Provide a description of the institution's commitment to ongoing administrative, financial, and technical support of the proposed program and continuation of the program for a period sufficient to allow enrolled students to complete the program:

The Dean of the UMB SGS has identified this program as a top priority and committed significant resources to startup costs and ongoing administrative support of this program. Two associate deans and the director of admissions are actively involved in the program planning and launch. SGS's values and processes, including instructional expertise and student advising, will ensure a high-touch learning experience for students. Furthermore, a comprehensive set of support services are provided to aid students through the UMB Division of Student Affairs. UMB has also invested in technical assistance through its Center for Information Technology Services and the Faculty Center for Teaching and Learning, which both assist faculty and students to attain success as teachers and learners, respectively. If for some unforeseeable reason the university discontinues the M.S. in Trauma Sciences, then UMB is committed to a teach-out plan for all enrolled students so they may complete the program and earn their degree.

B. Critical and Compelling Regional or Statewide Need as Identified in the State Plan:

In his opening letter in the 2017-2021 Maryland State Plan, Secretary of Education Dr. James Felder outlines the strategic aims for higher education in Maryland as "***Access, Success, and Innovation***" as well as acknowledges the challenges associated with the increasing popularity of online learning. These three primary goals remained the same in the 2022 State Plan for Higher Education and were highlighted further, with importance stressed on equity of education and agility to respond to the changing needs of the workforce secondary to COVID 19. The online Masters in Trauma Sciences is a unique addition to secondary education and offers benefits to healthcare providers and administrators who seek further knowledge and skills to care for the injured patient, but have not since had an avenue to do so. SGS's advanced online learning platform and STC's experience with asynchronous training will, for the first time, permit high quality online learning in trauma care.

The master's in Trauma Sciences is designed to meet all three of the goals as outlined by the 2022 UM State Plan for Higher Education.

GOAL 1: STUDENT ACCESS Ensure equitable access to affordable and high-quality postsecondary education for all Maryland residents.

The master's in Trauma Sciences is designed to be an accessible option for post-secondary students and working adults, from multiple health professions, and trauma science roles. As a state institution Maryland residents are afforded the opportunity to benefit from affordable instate tuition gaining access to nationally renowned faculty and state of the art education.

GOAL 2: STUDENT SUCCESS Promote and implement practices and policies that will ensure student success.

The master's in Trauma Sciences is designed in collaboration with learning and teaching scientists, subject matter experts and specifically uses learning theory and teaching strategies to optimize student success while adhering to universal design for learning best practices. Through a scaffolded curriculum inclusive of engaging multi-media, discussion, case based learning and recurrent retrieval exercises learners are supported throughout their learning journey to be successful in their knowledge acquisition and application in real world scenarios.

Priority 5 of the 2022 Maryland State Plan for Higher Education seeks to maintain the commitment of high quality post-secondary education in Maryland. The number one action item of this priority is to identify innovative fields of study. University of Maryland, Baltimore and the R. Cowley Shock Trauma Center are known for their innovation to foster excellence in patient care, education to train the next generation of clinical providers, administrators and researchers. By combining this wealth of experience with the expertise of the UMB School of Graduate Studies team, to provide a state-of-the-art trauma science curriculum which will be made accessible to students in Maryland and beyond we are aligned to this priority. This program and degree will be first of its kind in the nation therefore achieving the action item. In addition to Priority 5, Priority 7 seeks to enhance the ways post-secondary education is a platform for lifelong learning.

GOAL 3: INNOVATION Foster innovation in all aspects of Maryland higher education to improve access and student success.

The distance learning model allows greater access to the course material for Maryland residents as well as a larger global trauma care community. Ongoing professional education on the clinical aspects of trauma care traditionally required in person attendance at courses and conferences. Online asynchronous access to this material at the convenience of the learner provides flexibility for working professionals who do not have the time or geographic freedom to attend in-person coursework. Traditionally, formal education in trauma care has been accessible only to students training in high-volume trauma centers like STC. *This course of study represents an innovative reimagining of trauma care education and trauma systems science, breaking down those barriers and broadening access.*

The subject of trauma systems is expansive, covering all aspects of trauma prevention, care, and rehabilitation. The proposed program will be the first academic program in the

U.S. that formally explores the breadth of trauma systems of care. The proposed M.S. in Trauma Sciences uses the existing educational content and expertise in place at UMB to build an innovative distance learning program targeting professionals with the desire to improve their knowledge of the science of trauma care and trauma systems. The interprofessional coursework will cover cutting edge medical innovation as well as create an environment fostering innovation and collaboration with a potentially global reach.

The M.S. in Trauma Sciences program is developed in collaboration with teaching and learning scientists and subject matter experts, utilizing evidence-based learning theories and teaching strategies to optimize student success while adhering to universal design for learning best practices. Through a scaffolded curriculum inclusive of engaging multimedia, discussion boards, case-based learning and recurrent retrieval exercises, learners are supported throughout their learning journey to be successful in their knowledge acquisition and application in real world scenarios.

C. Quantifiable and Reliable Evidence and Documentation of Market Supply and Demand in the Region and State:

Traumatic injury is a significant but often underappreciated cause of death and disease in the United States. According to data from the Centers for Disease Control and Prevention (CDC) from 2016 to 2018, unintentional injury ranks as the third leading cause of death in the U.S. By age group, unintentional injury is the leading cause of death for individuals aged 1 to 44. Additionally, suicide and homicide are among the top ten causes of mortality for this age group. These statistics, however, fail to capture the extensive morbidity associated with traumatic injuries.

The American College of Surgeons' National Trauma Data Bank (NTDB) collects data on injured patients from 747 hospitals nationwide, including 499 Level I or II trauma centers. The 2016 report recorded over 861,000 traumatic incidents, resulting in nearly 38,000 deaths. This data underscores the significant burden that trauma places on health systems across the United States. While research indicates that a systems-based approach to trauma care improves survival rates, there is currently no formal educational degree program in the United States that focuses on the science of trauma systems. A distance-learning, comprehensive program aimed at enhancing the understanding of trauma care could serve a large and unmet need among potential students.

Traumatic injury is recognized as a distinct disease process. The American College of Surgeons acknowledged this in 1922 with the establishment of the Committee on Trauma. The formalization of a systems-based approach, encompassing prevention, care, rehabilitation, and reintegration, was published in the *Guidelines for the Optimal Care of the Injured Patient* in 1976. This approach is now a cornerstone of surgical training and certification for general surgeons. In 1966, the Institute of Medicine's report, *Accidental Death and Disability: The Neglected Disease of a Modern Society*, highlighted trauma as a preventable illness. It emphasized the importance of interventions beyond hospital settings to reduce traumatic deaths. Building on this foundation, a Master's in Trauma

Sciences program would further educate healthcare administrators and practitioners about trauma as a preventable condition.

Currently, trauma education is largely conducted in person through courses offered by the American College of Surgeons, such as *Advanced Trauma Life Support (ATLS)*, *Advanced Trauma Operative Management (ATOM)*, *Advanced Surgical Skills for Exposure in Trauma (ASSET)*, and *Basic Endovascular Skills for Trauma (BEST)*. Additionally, continuing medical education is now a required component of the maintenance of certification process for surgeons and other healthcare providers. However, this training has historically been confined to surgical training programs or ATLS courses. A formal degree program would broaden access to this critical education, filling a significant gap in trauma training and systems science.

UMB's proposed M.S. in Trauma Sciences is designed to enhance the education of healthcare professionals who care for injured patients and engage in or study trauma systems. Currently, many healthcare professionals in trauma, emergency medicine, and trauma critical care receive much of their training through on-the-job, "just-in-time" learning. This degree program addresses the need for comprehensive academic instruction beyond the scope of the 2-day *Advanced Trauma Life Support (ATLS)* course, while not replacing the intensive training provided in Trauma Surgery and Surgical Critical Care Fellowships. The program also aims to provide non-physician professionals with access to educational resources that will strengthen their ability to contribute as essential members of the multidisciplinary teams required to deliver optimal trauma care.

A market analysis performed by EAB Market Insights (appendix c) evaluated demand for master's-level professionals in trauma care, trauma systems development, science, leadership, and administration. This revealed a steady increase in employer demand. From January 2018 to December 2020, demand grew at an average monthly rate of 2.12%. Between December 2021 and November 2024, employer demand remained relatively stable, with a modest growth rate of 0.11% per month. These trends suggest a moderate-to-high need for professionals with advanced training in trauma systems.

Graduates of this program can expect to enter a job market with steady employment opportunities. As the benefits of trauma systems are increasingly recognized across the United States and globally, the focus on systems-based care positions this course of study as highly applicable for professionals involved in the administration, development, and leadership of healthcare systems worldwide.

Based on enrollment from the two other M.S. in Trauma Sciences in the world, we anticipate enrollment for the proposed M.S. in Trauma Sciences will comprise of:

- Clinicians and healthcare administrators interested in increasing their knowledge of and skills in the care of trauma patients and developing improved trauma systems to furnish this care. This includes Trauma Medical Directors in community trauma centers who wish to further their trauma knowledge to advance their institution

- Social scientists, governmental leaders, and others working in healthcare policies, systems, and practices who are interested in furthering their understanding of systems of trauma care.
- Military personnel interested in gaining further knowledge on care for the injured and trauma system development. STC has established and strong relationships with our military colleagues, particularly at Walter Reed Hospital.
- Current students from the UMB interested in further trauma related education or trauma leadership positions such as nurses, physician assistants, physicians, social workers, and pharmacists
- International students – given that Trauma Surgery and Surgical Critical Care Fellowships are not routinely offered outside of the United States and Canada, there is a great thirst for trauma knowledge globally, as noted by a Global Trauma Community survey published in the Journal of the American College of Surgeons in 2020

To be eligible to enroll in the M.S. in Trauma Sciences, individuals must have completed a Bachelors' Degree, with a strong interest in and demonstrated experience of care of the physically injured trauma patient. Graduates with a M.S. in Trauma Sciences will be qualified to pursue employment in the following settings:

- Designated trauma centers
- State and city level health administration
- Non-Governmental Organizations (NGOs) focused on injury prevention, violence interruption, trauma care systems development, or other trauma care specialties
- Other NGOs providing clinical care for injured patients
- Research and academic institutions
- Multi-lateral agencies (such as World Health Organization)
- Governmental agencies (including the Department of Defense, Health and Human Services, Centers for Disease Control, and/or their local Ministry of Health)
- Disaster relief organizations

Given the increasing interest in trauma science and care, demand for trained staff in these areas is expected to remain high. The proposed M.S. in Trauma Sciences will build upon participants' clinical, administrative, and/or research skills and provide courses in clinical care, managerial skills, and healthcare delivery systems needed to integrate care across the spectrum of trauma systems.

D. Reasonableness of Program Duplication

There are currently no master's degree programs in Trauma Sciences in the United States, making this the first of its kind. Globally, the only other two related master's degrees taught in English are located in the United Kingdom (Barts Centre for Trauma Sciences/Queen Mary of London) and Australia (University of Newcastle). The proposed

degree is designed to apply and advance Trauma Sciences to improve clinical care outcomes of Trauma care delivery.

This degree is different from the History of Medicine, Science and Technology degree where the emphasis is on advancing the scholarship of the history of medicine, disease and the health sciences, and their relation to society. The JHU Department seeks to bring historical perspectives to bear on multiple contemporary health issues. The Bioinformatics MS degree at JHU, is a combination of computer sciences and life sciences, harnessing big data to gain insights to drive innovation. The bioinformatics field reaches beyond individual specialties and disciplines. The MS Demography degree focuses on analysis methods designed to define denominators to calculate health outcome measures. This work is critical to allow for data collection, analysis and reporting accuracy. However, is not similar to the proposed degree. Last is the Salisbury University degree in Health and Human Performance, designed to advance knowledge and application of applied physiology to improve sports performance through strength training, conditioning, wellness and fitness this degree is not similar to the proposed degree.

E. Relevance to High-demand Programs at Historically Black Institutions (HBIs)

The proposed M.S. in Trauma Sciences does not have relevance to HBIs.

F. Relevance to the identity of Historically Black Institutions (HBIs)

The proposed M.S. in Trauma Sciences does not have direct relevance to the identity of HBIs in Maryland. Any student who has attended a regionally accredited institution and completed a baccalaureate degree, including those from HBIs, and meets the admissions requirements is eligible to apply to the program.

G. Adequacy of Curriculum Design, Program Modality, and Related Learning Outcomes

1. Describe how the proposed program was established, and also describe the faculty who will oversee the program.

The M.S. in Trauma Sciences was proposed by SGS and University of Maryland School of Medicine faculty and approved by the faculty shared-governance body, the Graduate Council, in recognition of the compelling need for accessible education and training in trauma sciences. STC and, by extension, UMB, are world recognized leaders in the provision of trauma surgery and surgical critical care for injured patients.

The faculty realized that the bulk of the coursework required to offer a M.S. in Trauma Sciences already exists at UMB and that there is considerable expertise to create a world-class educational experience for students. The faculty overseeing the program are listed with their credentials in Section I, subsection 1: Adequacy of Faculty Resources.

2. Describe educational objectives and learning outcomes appropriate to the rigor,

breadth, and (modality) of the program.

Summative assessment strategy related to each program outcome

- **Evaluate Clinical Management Strategies**
Assessment Strategy: Case-Based Assessment, Simulation
After reviewing didactics and primary sources from trauma literature, students will use real or simulated trauma cases to make recommendations for clinical management and analyze and evaluate clinical management strategies for common injuries.
- **Synthesize Team-Based Multidisciplinary Approaches to the Trauma Patient**
Assessment Strategy: Interprofessional Simulation Exercise
Conduct a simulated team-based scenario where students from various specialties collaborate to manage a trauma case. Student performance will be assessed based on their ability to integrate knowledge from their respective fields and contribute to effective teamwork in trauma care.
- **Design a Research Project and Contribute to the Trauma Literature**
Assessment Strategy: Thesis Defense in Front of Committee
Students will design a research project on any subject within the category of trauma. They will then defend their work and write a manuscript for a peer-reviewed journal.
- **Design a Public Health Initiative**
Assessment Strategy: Presentation/Research paper
Students will discuss an idea for and devise strategies to implement a public health initiative, reflecting the epidemiology of trauma and highlighting its preventability.

The initiatives can be applicable to the students' background or practice setting in rural, urban, domestic, international or low- or high-resource settings. The project will be evaluated based on the thoroughness and feasibility of their design.
- **Design a Trauma System**
Assessment Strategy: Research Paper/Project
Students will develop a comprehensive proposal for a trauma system within a designated community. This will include appraising current models of care, triage protocols, and prehospital integration, focusing on public health approaches. The project will be evaluated based on the thoroughness and feasibility of their design.
- **Implement Critical Care Protocols**
Assessment Strategy: Practical Skills Assessment
Through structured stations or simulations, students will demonstrate their ability to implement critical care protocols as they pertain to injured trauma patients.

Assessment criteria will include patient management skills such as ventilator management, monitoring techniques, and addressing infectious diseases.

- **Facilitate Rehabilitation and Recovery**

- **Assessment Strategy: Comprehensive Care Plan**

- Students will create a comprehensive rehabilitation plan for a fictional patient with specific injuries. The plan should address physical, psychological, and community reintegration needs, evaluated on its comprehensiveness, practicality, and evidence-based approaches.

- **Analyze Policy and Legislative Frameworks**

- **Assessment Strategy: Policy Analysis Brief**

- Students will write a policy analysis brief that critically examines a specific public health law affecting trauma systems. The assessment will focus on the depth of analysis, understanding of legal implications, and the use of research methods in developing advocacy recommendations.

A more detailed objective list is in Appendix B.

3. Explain how the institution will provide for assessment of student achievement of learning outcomes in the program and document student achievement of learning outcomes in the program.

Faculty will assess student achievement and mastery of learning outcomes in these courses using a variety of assessments including meaningful and substantive contributions to online course discussions, satisfactory completion of assignments including but not limited to scores on multiple choice question quizzes and examinations, case-based questions, and the second-year written thesis which will be an original research project in the field of trauma.

Students will also have the opportunity to evaluate courses and faculty through a standard evaluation of every course. Evaluation will occur at the mid-course and end of course, anonymous responses will be collected and utilized to inform ongoing programmatic review and continuous improvement. Formal assessment planning is already in place throughout UMB Schools. Our approach to curriculum development, utilizes a backward design process. We begin with defining the discipline specific competency framework, which has informed the aforementioned program level outcomes. The program level outcomes then inform the summative assessments. From there based on the learning domain (knowledge, skill or attitude) we have defined course level outcomes, each mapped to programmatic outcomes. The course level outcomes inform our instructional objectives, formative and summative assessment methods and learning strategies as well as content. Assessment activities emphasize analysis of results and feedback loops for continuous improvement. Additional evaluation includes tracking of student retention, grade distributions, and cost-effectiveness; regular academic program reviews consider these factors.

4. Provide a list of courses with title, semester credit hours and course descriptions, along with a description of program requirements

Students must complete all the following core courses (15-credits, online). The 2nd year Masters in Trauma Sciences curriculum will be 15 credits.

During the 1st year, all students will be required to take a Research seminar (3 credits) and prepare a thesis (6 credits taken over two courses) during the second year. A student will have 9 credits to choose from a variety of electives. A specialization is available to the student if they choose 6 credits from one area of study (clinical, research or global health). Specializing, however, is not a requirement of the Masters.

| Year 1 | Course | Credits |
|----------------------|--|----------------|
| Fall A | A Global View of Trauma (TRMA 601) | 3 |
| Fall B | The Art of Resuscitation (TRMA 602) | 3 |
| Spring A | Clinical Trauma from Head to Toe (TRMA 603) | 3 |
| Spring B | Advanced Trauma Systems (TRMA 604) | 3 |
| Summer | Research seminar (TRMA 605) | 3 |
| Year 2 | | |
| Fall A | Elective 1 | 3 |
| Fall B | Intro to Thesis (TRMA 606) | 3 |
| Spring A | Elective 2 | 3 |
| Spring A | Elective 3 | 3 |
| Spring B | Thesis (TRMA 710) | 3 |
| Total Credits | | 30 |

CORE COURSES (Students take all five courses, 15 credits)

Global View of Trauma: The Disease and Epidemiology, 3 credits (TRMA 601)

This course provides an overview of trauma care, spanning from originations of trauma care to its current global impact with introduction to the WHO Emergency Trauma and Acute Care Program. Trauma is introduced as a preventable disease and this course delves deeply into the creation of trauma systems globally. We will explore trauma systems spanning from one of the most advanced in the world at the Maryland Shock Trauma Center to trauma care in low resource settings without systematic care. Trauma care is tailored to the community in which it serves, thus trauma care can look differently across the globe. We will explore established trauma systems and trauma communities across all continents, so the learner can grasp the diversity yet similarity of trauma care globally. This course will emphasize the leadership qualities needed within the field of

trauma and describe trauma care as a multidisciplinary team sport – including nurses, pharmacists, social workers, physicians and emergency medical providers.

The Art of Resuscitation, 3 credits (TRMA 602)

This course is a comprehensive, multidisciplinary examination of how to care for the critically injured patient. Taught by world experts in the field, this course will begin by evaluating an unstable patient in the prehospital setting to the trauma bay, including discussions surrounding resuscitative thoracotomies and REBOA (resuscitative endovascular balloon occlusion of the aorta). We will discuss the history of blood resuscitation and the current best evidence-based practices, including the use of thromboelastography. The evolving field of damage control resuscitation and resuscitation endpoints will be explored. This course will have faculty from the field of trauma anesthesia who will discuss airway management in the unstable patient, medications for induction and sedation and hemodynamic monitoring. Point of Care Ultrasound (POCUS) will be taught by experts in the field, the learner will gain an appreciation for the utilization of ultrasound techniques in the unstable patient. The role of imaging and interventional radiology will be taught by trauma radiologists. This course will also explore advanced resuscitation efforts such as extracorporeal membrane oxygenation (ECMO) and therapeutic hypothermia in trauma.

Clinical Trauma from Head to Toe, 3 credits (TRMA 603)

This course provides in-depth knowledge on principles and strategies of clinical trauma care, organized anatomically. This course will be taught by clinical experts discussing the initial management of specific injury patterns, operative techniques and most recent clinical evidence of both penetrating and blunt trauma. This course will also discuss the clinical management of special trauma populations such as pediatrics, geriatrics and the pregnant woman. Though this course will mostly be taught by Shock Trauma Center surgery faculty, this course also places special emphasis on the multi-disciplinary collaboration of trauma care, with some modules being taught by orthopedic surgeons, vascular surgeons, cardiothoracic surgeons, oral maxillofacial surgeons, neurosurgeons and anesthesiologists.

Advanced Trauma Systems, 3 credits (TRMA 604)

Seeing trauma as a preventable illness, this course will delve deeply into injury prevention with special focus on violence prevention programs and road traffic injuries. The details of how to maintain an efficient and effective trauma system will be discussed in this course, including verification systems, trauma registries, education and performance improvement. This course will introduce military trauma systems and delve into disaster response systems and mass casualty events, then leading to discussions on humanitarian assistance globally. This course will discuss end of life care within trauma victims, including palliative care, trauma survivorship and organ donation.

Research Seminar, 3 credits (TRMA 605)

This is a required course for all Masters in Trauma Sciences students. Participants in this course will be introduced to scholarly writing and research methodologies. The aim of

this course is to provide a strong foundation for all students prior to developing their Master's Thesis.

THESIS (6 credits over two courses)

Intro to Thesis, 3 credits (TRMA 606)

A thesis is a requirement of each student to graduate from the program. This course will introduce the student to the requirements of the thesis, help develop a thesis based on the interest of the student and pair each student with a thesis mentor.

Thesis, 3 credits (TRMA 710)

This course will be dedicated for the student to complete their thesis prior to graduation.

ELECTIVES (Students select three courses, 9 credits)

Clinical Courses

Advanced Surgical Management in Trauma, 3 credits (TRMA 701)

This course provides in-depth knowledge on the operative principles of trauma care. Modules will be taught by Shock Trauma faculty with operative expertise in trauma care. The course will go over advanced surgical exposure of the abdomen, retroperitoneum, chest and vascular exposures. In addition to didactics to go over anatomy and surgical exposure, this course will include operative videos during live cases. This course will also include videos from cadaver lab, where operative exposure will be thoroughly explained while a student can watch the dissection and operative management.

Critical Care in Trauma, 3 credits (TRMA 702)

Trauma care has improved over the past 20 years, largely from improvements in trauma systems, assessments, triage, resuscitation and emergency care. Key to this improvement is the growth of critical care for the injured patient. Care of the polytrauma patient does not end in the operating room or the resuscitation bay. The patient presenting to the intensive care unit following initial resuscitation and damage control surgery may be far from stable with ongoing hemorrhage, resuscitation needs and injuries still requiring definitive repair. A trauma care provider should understand the totality of care in the intensive care unit, including respiratory, cardiovascular, metabolic and immunologic consequences of the injured patient. This course will provide the foundation of critical care management for the injured patient.

Clinical Clerkship, 3 credits (TRMA 703)

To augment lessons learned throughout the Masters in Trauma curriculum, a two-week clinical rotation can be created based on the student's interests. This clinical elective can be based in trauma care, surgical critical care, trauma anesthesia, emergency medical services, extracorporeal membrane oxygenation (ECMO), critical care resuscitation unit (CCRU) or emergency general surgery. Given the vast backgrounds of the students, this clerkship can be tailored to a student's level of training and expertise.

Research Courses

Science Communication Principles, 3 credits (MHS 603)

This course provides an overview of the key principles of inclusive science communication and explores common approaches to communicate science to various audiences, with a particular focus on writing. Students will review principles of effective science communication, both through analyzing existing forms of science communication and through applying these principles in their own writing. Students will be composing several writing and communication assignments throughout the course on a topic of their choice. The goal is to practice science communication principles in their own writing, culminating in a small portfolio of their revised work produced in this class. Frequent instructor feedback will give students numerous opportunities to practice communication skills.

Introduction to Research Ethics, 3 credits (ETHC 637)

This course will acquaint students with basic concepts in research ethics, will examine the ethical and philosophical issues raised by involving human subjects in research, review concepts of risks and benefits, vulnerability, privacy and confidentiality, undue inducement, exploitation, equipoise, and therapeutic misconception. By the end of the course, students will be able to analyze research protocols and assess the ethical appropriateness of such protocols.

Biostatistics for the Health Professional, 3 credits (PREV 621, MHS 615)

This course is designed to introduce the students to a broad range of methods commonly used in biomedical and public health research, and to provide some hands-on data analysis experience. Topics to be covered include the role of statistics in science, properties of distributions, exploratory data analysis, inference about means, proportions and survival distributions, and introduction to multivariable methods.

Global Health Courses

Perspectives on Global Health, 3 credits (MHS 605)

The course provides an overview of the field of global health. It introduces students to the history, challenges, theories, and diverse perspectives that make up global health. The course overviews emerging global health priorities, policies, interventions, ethics and understanding the future of the field. In addition, particular attention is given to developing analytical tools to analyze global and local health phenomena, complementing them with a social justice-oriented lens. Learners will develop skills in analysis, leadership, teamwork and communication in a global context.

Global Surgery and Humanitarian Emergencies, 3 credits (TRMA 704)

Global surgery refers to the provision of surgical care on a worldwide scale, encompassing a broad range of surgical services such as emergency surgery, trauma care, obstetrical care, and essential surgical procedures. Global surgery addresses the disparities in access to safe and timely surgical care that exist between high-income countries and low- and middle-income countries. It aims to improve surgical infrastructure, increase the availability of surgical services, and enhance the overall quality of surgical care in resource-limited

settings. Surgery is an essential component of healthcare, and addressing surgical disparities is crucial for achieving global health equity.

Global surgery is essential for addressing public health emergencies and providing timely responses to disasters. In times of crisis, the availability of surgical services becomes critical for saving lives, preventing disabilities, and restoring the health of affected populations. By strengthening surgical systems globally, countries can better prepare for and respond to emergencies, ultimately saving more lives and reducing the impact of disasters. In this course, we will delve deeply into the field of global surgery, as well as begin to understand the complexity and intricacies of providing surgical care in low resource settings. We will explore this complex field by understanding that one's access to healthcare and surgery may rely heavily on one's political context and social situation. We will utilize case studies to explore current complex humanitarian emergencies and different countries' access to surgical care.

Global Health Management and Leadership, 3 credits (GLBH 652)

This course explores key strategy, management, and leadership practices in global health programs and examines the essential components of best practice global health improvement programs. It is designed to train leaders in the application, testing, and refinement of current frameworks in health care delivery. This course will provide an in-depth review of leadership functions to equip students with the knowledge and skills to understand, organize, and manage complex global health delivery organizations. Students will study the theory and practice of health care delivery, various roles within the health system, and how global health delivery organization's function. Students will apply their learning in case-based situations and deploy procedures and processes to effectively improve health outcomes.

5. Discuss how general education requirements will be met, if applicable.

Not Applicable.

6. Identify any specialized accreditation or graduate certification requirements for this program and its students.

There are no specialized accreditation or graduate certification requirements for the proposed M.S. in Trauma Sciences.

7. If contracting with another institution or non-collegiate organization, provide a copy of the written contract.

There are no plans for contracting with another institution or non-collegiate organization at this time.

8. Provide assurance and any appropriate evidence that the proposed program will provide students with clear, complete, and timely information on the curriculum, course and degree requirements, nature of faculty/student interaction, assumptions

about technology competence and skills, technical equipment requirements, learning management system, availability of academic support services and financial aid resources, and costs and payment policies.

The School of Graduate Studies maintains up-to-date information of its degree programs on the program explorer website ([Programs](#)). The website will have information on the curriculum, course descriptions, degree requirements, and cost of education. The website has links to information about programs, learning management system, support services, and financial aid.

9. Provide assurance and any appropriate evidence that advertising, recruiting, and admissions materials will clearly and accurately represent the proposed program and the services available.

The School of Graduate Studies at UMB affirms that all advertising, recruiting and admissions materials will accurately represent the M.S. in Trauma Sciences, as do all materials produced by UMB’s School of Graduate Studies for programs it offers.

H. Adequacy of Articulation

Not applicable

I. Adequacy of Faculty Resources

1. Provide a brief narrative demonstrating the quality of program faculty. Include a summary list of faculty with appointment type, terminal degree title and field, academic title/rank, status (full-time, part-time, adjunct) and the course(s) each faculty member will teach in the proposed program.

The following table summarizes information about the faculty who will be responsible for designing and instructing coursework in the M.S. in Trauma Sciences program:

| Name | Terminal Degree and Discipline | Rank and FT/PT Status | Course |
|----------------|---------------------------------------|------------------------------|--|
| Thomas Scalea | MD, Medicine | FT, Professor | TRMA 601, TRMA 602, TRMA 603, TRMA 701 |
| Shailvi Gupta | MD MPH, Medicine | FT, Associate Professor | TRMA 601, TRMA 602, TRMA 603, TRMA 605, TRMA 606, TRMA 701, TRMA 704, TRMA 710 |
| Susan Brundage | MD MPH, Medicine | FT, Professor | TRMA 601, TRMA 604, TRMA 606, TRMA 710 |

| | | | |
|------------------|-------------------------------------|-------------------------|--|
| Marcelo Ribeiro | MD, Medicine | FT, Professor | TRMA 601, TRMA 603, TRMA 606, TRMA 701, TRMA 704, TRMA 710 |
| Jaclyn Clark | MD, Medicine | FT, Assistant Professor | TRMA 602, TRMA 603, TRMA 606, TRMA 701, TRMA 703, TRMA 710 |
| David Efron | MD, Medicine | FT, Professor | TRMA 604, TRMA 701 |
| John Maddox | MD, Medicine | PT, Assistant Professor | TRMA 604 |
| Deborah Stein | MD MPH, Medicine | FT, Professor | TRMA 602, TRMA 603, TRMA 605, TRMA 606, TRMA 710 |
| Sharon Henry | MD, Medicine | FT, Professor | TRMA 603 |
| Elizabeth Powell | MD, Medicine | FT, Associate Professor | TRMA 602, TRMA 702 |
| Eric Ley | MD, Medicine | FT, Professor | TRMA 702 |
| Samuel Tisherman | MD, Medicine | FT, Professor | TRMA 602, TRMA 702 |
| Rishi Kundi | MD, Medicine | FT, Associate Professor | TRMA 603, TRMA 701 |
| Rosemary Kozar | MD, Medicine | FT, Professor | TRMA 605, TRMA 606, TRMA 702, TRMA 710 |
| Sarah Murthi | MD, Medicine | FT, Professor | TRMA 602 |
| Daniel Haase | MD, Medicine | FT, Associate Professor | TRMA 601, TRMA 602, TRMA 702 |
| Mira Ghneim | MD, Medicine | FT, Assistant Professor | TRMA 605, TRMA 701 |
| Carlos Guzman | MD, Global Health | FT, Associate Professor | MHS 605, GLBH 652 |
| Isabell C. May | PhD, Science Communication | FT, Associate Professor | MHS 603 |
| Henry Silverman | MD, Medicine | FT, Professor | ETHC 637 |
| Laurence Magder | PhD, Epidemiology and Public Health | FT, Professor | PREV 621/MHS 615 |

3. Demonstrate how the institution will provide ongoing pedagogy training for faculty in evidenced-based best practices, including training in:

UMB has a robust process for training faculty and ensuring effective instruction. Based on Quality Matters standards, UMB developed a rubric which details the best practices for distance education; this rubric helps faculty and instructional designers create the courses; assesses the readiness of the course and ensures that the online courses are instructionally and pedagogically sound. The best practices are a synthesis of strategies, activities, design techniques, and organizational items that have been successful in higher education. The specific domains of this checklist are as follows:

- Course overview and introduction to the students
- Course organization and design
- Learning Objectives (competencies)
- Instructional Materials
- Learner Communication, Interaction and Collaboration
- Assessment and Evaluation (measurement)
- Course Technology
- Learner Support

The Learning Management Platform UMB utilizes and provides IT support for is the Blackboard Learning Management System for online course delivery. Within Blackboard, online conferencing platforms such as Zoom will be available for our synchronous live activities. Additionally, the Faculty Center for Teaching and Learning (FCTL) which houses expert Instructional and Educational Media Specialists, who can provide guidance on uses of video cameras to record lectures, integrate webcams, and an interactive smart board. We also use the Camtasia software for screen lecture capture.

J. Adequacy of Library Resources

The University of Maryland Health Sciences and Human Services Library (HSHSL) serves as a hub for collaboration and learning on the UMB campus and is one of the largest health sciences libraries in the United States both physically and by collection size. Opened in 1998, the HSHSL building is fully equipped with Wi-Fi and has seating for over 900 users including 41 group study rooms, three computer classrooms, an Innovation Space that includes 3D printers, a presentation and production studio, art gallery, and technology-enhanced meeting and collaboration spaces. The HSHSL website (www.hshsl.umaryland.edu) provides access to a range of resources and services.

The library provides access to 108 databases, 4,737 e-journals, 17,669 e-books, and maintains a collection of 144,416 print books and 7,586 archival print journals. Through the library's interlibrary loan and document delivery services, faculty, staff, and students may acquire articles and other resources not available through the library's collections. The HSHSL also provides access to the UMB Digital Archive, an open access university repository hosting university created research including white papers, research posters, and more.

The HSHSL has a history of innovative and user-centered services. With a team of 26 faculty librarians and 28 library staff, the HSHSL serves UMB's 6,900 students and over

8,000 faculty and staff members in the schools of dentistry, medicine, nursing, pharmacy, social work, and graduate studies. The library also provides access and services to the University of Maryland Medical Center (UMMC) and other affiliated institutions. The library's [suite of research services](#) is available for all programs on campus, and includes research and publication strategy consultations, systematic review and expert literature searching services, research impact assessment, public access policy compliance review, and other research services as requested. The library's Center for Data and Bioinformatics Services offers consultations and workshops on data access, management, and sharing, as well as support for bioinformatics research, including information on high throughput sequence analysis, DNA, RNA, protein data resources, and research computing.

The HSHSL is home to the National Network of Libraries of Medicine (NNLM) Region 1, an outreach program of the National Library of Medicine, whose mission is to advance the progress of medicine and improve public health and access to health information. The HSHSL has held this competitive and prestigious grant funded designation for over 35 years. In 2021, the HSHSL was also selected to host the NNLM Network Web Services Office (NWSO), which develops and maintains web services for all seven NNLM Regions and other NNLM centers. Through its outreach programming the NNLM Region 1 and the HSHSL regularly reach over 3,000 community members and unaffiliated groups through free workshops, exhibits, and presentations on topics including health literacy, data management, and citizen science.

K. Adequacy of Physical Facilities, Infrastructure, and Instructional Equipment

UMB's 65-acre research and technology complex encompasses 57 buildings in west Baltimore near the Inner Harbor. Faculty have offices provided within their respective departments. UMB has adequate facilities, infrastructure, and equipment to support any learning needs of the master's program. Students will have full access to the computing facilities and student services at UMB. Students will be provided with UMB e-mail and library accounts and will have complete journal searching ability via PubMed. UMB possesses computing facilities that includes a networked computing environment for support of a broad range of information technology functions, including basic research, clinical research, patient information and general office management. A cloud-based secure research environment has also recently been deployed to ensure compliance with requirements such as HIPAA.

L. Adequacy of Financial Resources with Documentation

No new general funds will be required for implementation of the proposed MS which will be coordinated and administered fully through the School of Graduate Studies. A budget is included in Appendix A.

M. Adequacy of Provisions for Evaluation of Program

Students will have the opportunity to evaluate courses and faculty through a standard evaluation of every course. Formal assessment planning is already in place throughout

UMB. Our approach includes ensuring that student learning is in alignment with course learning outcomes, alignment of mission at institutional and program levels, alignment of mission with learning outcomes, then program outcomes with curriculum, flowing down to course outcomes and assignments. Assessment activities emphasize analysis of results and feedback loops for continuous improvement. Additional evaluation includes tracking of student retention, grade distributions, and cost-effectiveness; regular academic program reviews consider these factors.

N. Consistency with the State’s Minority Student Achievement Goals

UMB is strongly committed to cultural diversity and the recruitment and retention of underrepresented minority students. Recruitment efforts for the M.S. in Trauma will include specific outreach to Historically Black Institutions.

O. Relationship to Low Productivity Programs Identified by the Commission

The proposed master’s program is not directly related to an identified low productivity program identified by the Maryland Higher Education Commission.

P. Adequacy of Distance Education Programs

As the State’s public health, law, and human services university, the mission of UMB is to excel at professional and graduate education, research, patient care, and public service, and to educate leaders in health care delivery, biomedical science, global health, social work, and the law. Also, UMB emphasizes interdisciplinary education in an atmosphere that explicitly values civility, diversity, collaboration, and accountability. UMB expects to achieve its mission in education excellence and to be competitive; the School of Graduate Studies has designed and offered online degree programs that respond to the following changes occurring in higher education (Allen, 2010).

1. Education Pipeline. The education pipeline includes a highly diverse prospective applicant pool. Prospective students are typically working adults who pursue part-time and non-residential educational opportunities, but who wish to remain in their regional geographic area, while pursuing advanced education. According to the National Center for Education Statistics, National Postsecondary Graduate Student Aid Study (NCES, NPSAS: GR; 2017), between the period of 2008 and 2017, there was a slight increase (3%) in the number of graduate students reporting full-time (FT) enrollment at a single institution. We suspect this may be partially influenced by availability of new online educational programs, where one can work, be considered enrolled FT, yet negotiate academic studies as one’s lifestyle permits.
2. Changing Demographics. Data indicate a shift from the traditional student (the 18-22-year-old, full-time resident) to older students studying part-time. In 2015-2016, the National Center for education Statistics (NCES, 2017) reported that 37.58% of graduate students were married and the average graduate student was 32 years old ($SD= 9.66$).

Nearly 9% of single/unmarried/divorced graduate students reported dependents, and nearly 60% of graduate students were female.

3. **Technology Shift.** Educational research suggests that online education achieves the same as, or better student learning outcomes, than traditional face-to-face delivery models (Tallent-Runnels, et al., 2006; Means et al., 2009). Online delivery is far outpacing traditional forms of educational delivery. Between 2002 to 2008, online enrollments grew at an annual rate of 19% vs. 1.5% versus all of Higher Education. By the fall of 2008, 25% (4.6 million) of all students took at least one online course. In 2019, the top five highest reported college enrollments nationally four were online universities, offering at least some graduate programs (NCES).
4. **Growth of Mobile Technologies.** Mobile technologies and miniaturization are changing the computing environment and the educational delivery paradigm. Technologies like netbooks, e-Readers, iPhones, and iPads have revolutionized the delivery space and to provide anywhere, anytime learning.
5. **Web 2.0 Revolution.** Other technologies that are already figuring widely into the future of education are part of the Web 2.0 revolution. The use of a variety of technologies is disaggregating the educational experience into 'the cloud'. Many of the technologies for the future, like blogs, wikis, podcasts, video, social networking and social media, virtual worlds, mobile learning, and Personal Learning environments, will have profound effects on the future learning landscape.

Online education represents a strategy that can address the restrictions of traditional onsite college courses, opening up accessibility for variety of learners, for a variety of reasons and expanding access to global education opportunities and expertise, beyond the walls of the campus. Major determinants of successful online programs include 1) course design that incorporates best practices (e.g. course alignment, integration of technology and content), 2) quality faculty who can engage students in the material (e.g. provide feedback and relevant expertise), and 3) provide responsible academic oversight. All three of these determinants are present in this proposal.

Instructional Design Team

The Faculty Center for Teaching and Learning's (FCTL) mission is to advance evidence-based teaching, learning and evaluation practice throughout the University community. As a central resource for all UMB schools, the center provides support and resources for faculty to enhance their teaching and improve student learning outcomes. The center offers consultations, instructional design, professional development, pedagogical training, coaching and media production services. The following individuals from the FCTL will support the distance education strategy for the proposed program. Additional staff from the FCTL will support these programs as needed.

Sol Roberts-Lieb, EdD | Director, Faculty Center for Teaching and Learning

Dr. Robert-Lieb's educational background includes a doctorate in educational policy and organizational leadership from the University of Illinois at Urbana-Champaign with a specialization in differentiated instruction and organized change, a Master's in technology impact and assessment from the University of Illinois at Springfield with a concentration in liberal and integrative studies, and a Bachelor's in chemistry from Illinois College. He presents his work internationally and is active in the International Association of Medical Science Education (IAMSE) and the Professional and Organizational Development Network (POD), a national association of directors of Centers for Teaching and Learning.

Becky Mendez, MA, MEd | Manager, Academic Innovation

Ms. Menendez is the manager for the instructional design team with a master's degree in elementary education, teaching English as a Second Language, and educational technology. She brings a deep understanding of educational practice and design in higher and postsecondary education, particularly with English language learners, and has supported online course design for the International Baccalaureate, the Community College of Baltimore County, and Penn State University. Becky is a trained Quality Matters peer reviewer, providing feedback and guidance to institutions on improving the quality of their online courses.

Chardai Stokes, MS | Academic Innovation Analyst

Ms. Stokes is an academic innovation analyst who joined the Faculty Center for Teaching and Learning in 2022. She has worked in higher education since earning her undergraduate degree in 2014. She holds a bachelor's degree in women's studies from the University of Maryland, College Park, and a master's degree in learning design and technology from University of Maryland Global Campus.

She worked at Baltimore City Community College for eight years in roles within the student affairs and the academic affairs divisions. Chardai also brings educational technology and student success experience from her position at 2U, which partnered with Simmons University.

Sharon Gillooly | Senior Media Production Specialist

Ms. Gillooly leads media production for the FCTL team. Her main focus is to produce videos that support academic instruction. After a long career in documentary television, she completed a Master's Certificate in Online Instructional Development from Florida State University where her work focused on instructional design and emerging technologies. Ms. Gillooly is especially interested in the use of media to enhance learning.

Collectively, the instructional design team will provide the following services to ensure that best pedagogical practices are used to train and support the most effective presentation of their course content.

- Guided tutorials on the online course development process, with open questions and answer sessions.

- Written instructions accompanied by training videos to guide faculty on how to use the learning management system.
- A manual for the faculty regarding principles of good practice and the pedagogy of distance education.
- Provide timely support to the faculty in the use of the technology and troubleshoot any problems that might arise during the course of instruction.
- Work with faculty to design and develop courses, monitor the delivery of the course, and assess and revise the course for future offerings.

Supporting Students in Distance Education

Most of the courses for the M.S. in Trauma Sciences will be online, and one elective course will be offered in-person. We realize that the key to the success of the online courses is dependent on 1) students knowing upfront the assumptions, requirements and responsibilities of taking an online course, 2) the ability of students to have the background, knowledge, and technical skills to undertake an online program; and 3) their having access to academic and technical support services to support their online activities. Accordingly, we will provide the following services to support the students in accessing distance learning technology:

- Communicate to students the nature of online learning, including their requirements, roles and responsibilities, and access to support services. All of our advertising, recruiting, and admissions materials shall clearly and accurately represent the program and the services available.
- Ensure that enrolled students shall have reasonable and adequate access to the range of student services to support their learning.
- Ensure that accepted students will have the background, knowledge, and technical skills needed to undertake the program.
- Make available the library Services to students so that they can have access to research databases, online catalog of books and media, chat with or e-mail a Librarian, electronic interlibrary loan, and more.

Evaluation and Assessment of Online Courses

We will adhere to a quality improvement model for assuring the continuous quality of the online courses. The process will involve the following steps:

1. Assessment of course readiness as measured by our quality indicators of best practices (including assessment of faculty readiness)
2. Monitoring of course delivery as assessed by the instructional designers with use of our “course evaluation’ rubric”
3. Obtainment of feedback from the faculty and students and instructional designers.
4. Institute course revisions based on comments by the Distance Learning Committee.

Finally, to ensure the sustainability of the distance learning program, the Academic Affairs Office at UMB affirms the following:

- UMB Policies for faculty evaluation includes appropriate consideration of teaching and scholarly activities related to programs offered through distance learning.
- Commitment to ongoing support, both financial and technical, and to a continuation of the program for a period sufficient to enable students to complete their credential.

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Appendix A

MS in Trauma Sciences Budget Tables

| TABLE 1: PROGRAM RESOURCES | | | | | |
|---|------------------|-------------------|-------------------|-------------------|-------------------|
| Resource Categories | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| 1. Reallocated Funds | \$ 0 | \$ 0 | \$0 | \$0 | \$0 |
| 2. Tuition/Fee Revenue (c + g below) | \$ 92,280 | \$ 254,139 | \$ 364,831 | \$ 528,813 | \$ 759,140 |
| a. Number of F/T Students | 0 | 8 | 12 | 16 | 24 |
| b. Annual Tuition/Fee Rate | \$ 13,842 | \$ 14,119 | \$ 14,401 | \$ 14,689 | \$ 14,983 |
| c. Total F/T Revenue (a x b) | \$0 | \$ 112,951 | \$ 172,815 | \$ 235,028 | \$ 359,593 |
| d. Number of P/T Students | 10 | 15 | 20 | 30 | 40 |
| e. Credit Hour Rate | \$ 769 | \$ 784 | \$ 800 | \$ 816 | \$ 832 |
| f. Annual Credit Hour Rate | 12 | 12 | 12 | 12 | 12 |
| g. Total P/T Revenue (d x e x f) | \$ 92,280 | \$ 141,188 | \$ 192,016 | \$ 293,785 | \$ 399,547 |
| 3. Grants, Contracts & Other External Sources | 0 | 0 | 0 | 0 | 0 |
| 4. Other Sources | \$ 262,728 | \$ 62,435 | \$ 21,058 | \$ 0 | \$ 0 |
| TOTAL (Add 1 – 4) | \$355,008 | \$ 316,574 | \$ 385,889 | \$ 528,813 | \$ 759,140 |

MS Trauma Sciences Budget Narrative

Reallocated Funds:

The SGS does not have plans to reallocate funds for this proposal.

Tuition and Fee Revenue:

This program is the first of its kind in Maryland and in the United States. Due to its novelty and leveraging the reputation of the R. Cowley Shock Trauma Center and the planned marketing campaign we have projected modest enrollments of a mix of full and part-time students. Two other programs are offered internationally, one in the UK the other in Australia. Their

enrollments exceed 200 per year. Tuition and fees are calculated based on our current tuition and fee projections assuming a 2 % increase year over year.

Grants and Contracts

No grants or contracts have been included in this proposal. Although the potential for grant and contract funding may exist given the expertise and specialty, we are not relying on this funding to support the program.

Other Resources

Year one through three includes other resources with a sharp drop off in year two once enrollments and tuition and fees are generating support for the program. The source of other resources includes dedicated funds from Shock Trauma to establish the program.

Total Year

The Master of Trauma Sciences Program is designed to be a self-supporting program based on revenue generation from tuition and fees. The SGS intends to invest in the development and support of the program to be established and then reinvest tuition funds into this program to sustain the growth and ongoing maintenance of this program.

| Expenditure Categories | | | | | |
|------------------------------------|------------------|------------------|------------------|------------------|------------------|
| 1. Faculty (b+c below) | \$154,560 | \$159,197 | \$218,630 | \$225,189 | \$231,945 |
| a. Number of FTE | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 |
| b. Total Salary | \$120,000 | \$123,600 | \$169,744 | \$174,836 | \$180,081 |
| c. Total Benefits | \$34,560 | \$35,597 | \$48,886 | \$50,353 | \$51,863 |
| 2. Admin Staff (b+c below) | \$65,688 | \$90,212 | \$116,147 | \$119,632 | \$123,221 |
| a. Number of FTE | 0.3 | 0.4 | 0.5 | 0.5 | 0.5 |
| b. Total Salary | \$51,000 | \$70,040 | \$90,177 | \$92,882 | \$95,668 |
| c. Total Benefits | \$14,688 | \$20,172 | \$25,971 | \$26,750 | \$27,552 |
| 3. Support Staff (b + c below) | \$25,760 | \$33,166 | \$34,161 | \$35,186 | \$36,241 |
| a. Number of FTE | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 |
| b. Total Salary | \$20,000 | \$25,750 | \$26,523 | \$27,318 | \$28,138 |
| c. Total Benefits | \$5,760 | \$7,416 | \$7,638 | \$7,868 | \$8,104 |
| 4. Technical Support and Equipment | \$84,000 | \$0 | \$0 | \$0 | \$0 |
| 5. Library | \$0 | \$0 | \$0 | \$0 | \$0 |
| 6. New or Renovated Space | \$0 | \$0 | \$0 | \$0 | \$0 |
| 7. Other Expenses | \$25,000 | \$34,000 | \$16,950 | \$17,423 | \$17,919 |
| TOTAL (Add 1-7) | \$355,008 | \$316,574 | \$385,889 | \$397,429 | \$409,326 |

Table 2 Budget Narrative

Faculty:

The program will utilize existing School of Medicine clinical and research faculty from the R Cowley Shock Trauma Center to create and deliver educational content and appoint a lead faculty member as program director to provide administrative oversight of the program. Clinical teaching is a recognized responsibility of School of Medicine faculty. The financial compensation listed in the table represents faculty FTE effort and benefits anticipated to support the students and provide program leadership. Effort increases steadily over the course of the five years.

Administrative Staff:

Due to the nature of clinical faculty schedules, and complexity of advising for this program, administrative support will be critical for the success of this program, as students are recruited into the program and continue in their matriculation. In the table effort steadily increases to a .5 FTE. The financial compensation integrates salary, benefits and anticipated COLA along with increasing efforts into the calculation.

Technical Support and Equipment:

This budget line item represents the significant support anticipated for development of innovative curricular content and the support needed from the Faculty Center for Teaching and Learning (FCTL). The support includes instructional design, instructional technology and multi-media production. It is listed as a one-time front-loaded expense, and then will be maintained through existing operational budget support for the FCTL.

Library Resource:

The SGS intends to leverage current resources available from the Health Science and Human Service Library on campus and already funds a library liaison for the school. No additional funding is anticipated to support this program.

New Renovated Space:

The MS of Trauma Sciences does not require new renovated space as it is an online program, with a single potential in-person clinical elective. Current infrastructure will support the new program, and additional space is not required.

Other expenses:

The funding amounts included in this category include advertising and marketing as well as travel of faculty to promote the program and local, and regional conference. This line item steadily decreases as we anticipate that the initial investment costs for creating content will be higher than what is needed to maintain marketing.

Appendix B

Detailed Objectives

By the completion of the proposed M.S. in Trauma Sciences and consistent with the topics outlined by the American College of Surgeons, World Health Organization, and Royal College of Surgeons of England, students will be able to:

Trauma Clinical Care

Understand clinical aspects of the acutely injured patient, and

- Describe the approach to the initial assessment and stabilization of the injured patient
 1. Assessment and triage
 2. Airway Management
 3. Breathing Management
 4. Circulation
 5. Principles of hemostasis
 6. Blood product transfusion
- Describe the pathophysiology of coagulopathy of trauma and the approaches to correction and patient stabilization
- Understand diagnostic imaging modalities and their appropriate utilization
 1. Bedside ultrasound imaging
 2. Flat plate X-ray imaging
 3. CT imaging
- Describe the pathophysiology of injury to the major body systems.
 1. Head Injuries
 2. Neck Injuries
 3. Chest Injuries
 4. Abdominal Injuries
 5. Pelvic Injuries
 6. Burns and Wounds
 7. Orthopedic injuries
 8. Neurosurgical Injuries
 - a. TBI
 - b. Spinal cord injury
 9. Diagnosis and monitoring
 10. Analgesia, sedation, and anesthesia
- Describe the pathophysiology and approach to treatment for special trauma populations
 1. Pediatric issues
 2. Obstetric issues
 3. Geriatric issues
- Critically assess and compare different team approaches to care with regard to specialties and their roles
 1. Emergency Medicine
 2. Surgery
 3. Critically appraise and understand the approach to trauma care in resource limited environments

- Describe treatment alternate approaches to stabilization and treatment in resource poor environments
- Understand the role of Critical care in the treatment of the injured patient
- Understand Critical care of the injured patient with regard to:
 - a) TBI
 - b) Spinal Cord Injury
 - c) Basics of ventilator management
 - d) Advanced ventilator management
 - e) Infectious Disease Considerations in Critical Care
- Understand the role of Rehabilitation services in the acute care and recovery of injured patients
 - a) Speech Pathology
 - b) Occupational Therapy
 - c) Physical Therapy
 - d) Physiatry
 - e) Capabilities
 - f) Facilities
 - g) Durable Medical Equipment
 - h) Prosthetics
- Understand the concept of Survivorship and the challenges of Reintegration into normal life
 - a) Psychiatric illness
 - b) Community Support
 - c) Disability issues
 1. Mobility
 2. Access issues
 3. Long term care
 - d) Survivorship issues from violence, disaster, and armed conflict
 - e) Models from resource poor environment

Trauma Systems

- Understand trauma systems of care, and
 - a) Critically appraise different system models to trauma care
 - b) Understand the role of triage and trauma protocols
 - c) Analyze different prehospital models and how they fit into the trauma system
 - d) Understand the role of clinical guidelines in prehospital care
 - e) Critically appraise different models of prehospital care and transport modalities
- Understand a public health approach to injury prevention, and
 - a) Develop a working understanding of injury epidemiology
 - b) Analyze different methods of injury and violence prevention
- Understand Trauma System Composition
- Understand Trauma System Management
- Critically appraise Public Health Law
- Understand Legislative Issues affecting trauma systems
- Compare and analyze different economic models of Trauma Care

- Care in low resource settings
 - a) Austere Environment Trauma Care
 - b) Humanitarian Trauma Care
- Disaster response / Mass Casualty
- Education
 - a) Role of system
 - b) All phases of patient care
 - c) Community outreach

Trauma Systems Leadership

- Develop an understanding of Systems leadership skills with attention to:
 - a) Just Culture
 - b) Communication
 - c) Media communication
 - d) Multidisciplinary Collaboration
- Understand Strategic planning and analysis techniques
- Demonstrate Executive Communication Skills
- Understand the conduct and role of translational research
- Develop an understanding of basic research statistics
- Demonstrate the conduct of Process Improvement and Quality Assurance
- Understand the role of accreditation in process improvement
- Understand Data Registry formation and data usage
- Develop and understanding of Public Health Research Methods
- Understand the process of Guideline development

Appendix C



An evaluation of employer demand in the United States, Canada, Europe, and South America for graduates from the proposed Hybrid Master of Science in Trauma Sciences and of student demand for similar programs in the United States.

Analysis Includes (Data included for all analyzed regions unless otherwise indicated):

- Job Posting Trends
- Top US and Canadian Occupations
- Top Titles
- Top Skills
- Top Employers
- Top Industries
- US and Canadian Education and Experience Levels
- US Degree Completion Trends

This analysis considered demand in areas defined as:

- The United States (US)
- Canada
- Europe: Austria, Belgium, Croatia, Czechia, Denmark, Germany, Italy, Ireland, Luxembourg, Netherlands, Spain, Sweden, Switzerland, United Kingdom
- South America: Argentina, Brazil, Chile

Market Concentration and Growing Competition in the United States May Challenge Program Launch Despite Modest and Stable Employer Demand in the American and Canadian Labor Markets

United States and Canada Labor Market Outlook

In the United States, a moderate-to-high number of job postings suggests program graduates will enter a modest labor market.

Between December 2023 and November 2024, employers advertised a moderate number of job postings (100,083). From December 2021 to November 2024, relevant employer demand remained fairly consistent (an average monthly growth of 0.11%) but due to some fluctuations in trends, ultimately declined by a net of 694 job postings. Overall, program graduates can expect to enter a job market with a modest number of employment opportunities, despite historical declines.

Relevant professionals will likely enter a limited, though growing, labor market in Canada. Over the past year, employers in Canada posted a low-to-moderate number of job postings (965). However, between December 2021 and November 2024, relevant employer demand grew by 4.35% on average monthly, outpacing demand for all master's-level professionals (0.56% on average monthly). Note, relevant employer demand growth translates to an actual average growth of one job posting per month, suggesting a low rate of job growth for relevant professionals. A low number of job postings paired with slight growth indicates program graduates will enter a limited job market.

United States Competitive Landscape Outlook

In the United States, growing competition and market concentration may challenge program launch, despite growing student demand.

Between the 2018-2019 and 2022-2023 academic years, growth in the number of institutions reporting completions outpaced student demand growth (an average annual 7.08% vs. 6.70%, respectively). In the 2022-2023 academic year, the top 20% of institutions held 69.00% of the market, indicating market concentration. Growing competition and market concentration may pose obstacles to program launch, despite some growth in student demand.

Market Pulsecheck Options for Next Steps

Following this analysis, the requesting partner can:

- Contact your Strategic Leader to schedule a call with the EAB research team to review the report.
- Choose to discontinue the research, if the leadership is able to make a decision based on this analysis and other institutional research.
- Continue the analysis. A final report of the continued research will address credential design and curricular recommendations as well as the prospective student experience.

Historical Labor Market Trends Indicate Limited Employer Demand for Trauma Sciences Professionals in Europe and South America

Global Labor Market Outlook

Low and declining employer demand suggests limited need for trauma sciences professionals in Europe and South America.

Between December 2023 and November 2024, employers advertised a low number of relevant job postings in the analyzed European and South American countries (170,908 and 7,481 job postings, respectively). Over the same period, European and South American employer demand declined (3.13% and 1.87% on average monthly, respectively). Taken together, these trends indicate relevant professionals likely will enter competitive job markets.

Research Limitations

Global labor market data specific to education levels is not available. Growth in demand is specific to professionals with a particular skillset at any education level.

Due to the absence of competitive landscape data for Europe and South America and a lack of sufficient data in the Canadian market, this report only analyzes United States student demand trends for programs related to trauma sciences.

Due to the self-reported nature of the NCES, some comparable and competitor programs may report completions for trauma sciences programs under different CIP codes not included in this analysis. Institutions may also report completions for programs unrelated to trauma sciences under any of the CIP codes analyzed in this report. Further, additional online programs may exist that are not captured in NCES data, as not all institutions offering a distance-delivery program report it as such. Additionally, if an institution offers multiple modalities, completions data will not distinguish between the number of online completions and face-to-face completions.



United States and Canada Labor Market Analysis



1

Labor Market Intelligence

Analysis of Job Postings for Master's-Level Trauma Sciences Professionals in the United States

Employer demand trends suggest a moderate-to-high need for master’s-level trauma sciences professionals. Between December 2023 and November 2024, employers advertised a moderate number of relevant job postings (100,083). From December 2021 to November 2024, relevant employer demand remained relatively consistent but ultimately experienced a net decline of 694 job postings. Note, relevant employer demand growth (0.11% on average monthly), translated to an actual average monthly decline of 19 job postings. Despite a small decline overall, a moderate and relatively stable number of job postings suggests a decent job market for program graduates.

0.11%

Average Monthly Demand Growth

December 2021 - November 2024, United States Data

- Average monthly decline of 19 job postings.
- During the same period, demand for all master’s-level professionals declined 0.58%.

20,998 postings

Average Monthly Demand

December 2021 - November 2024, United States Data

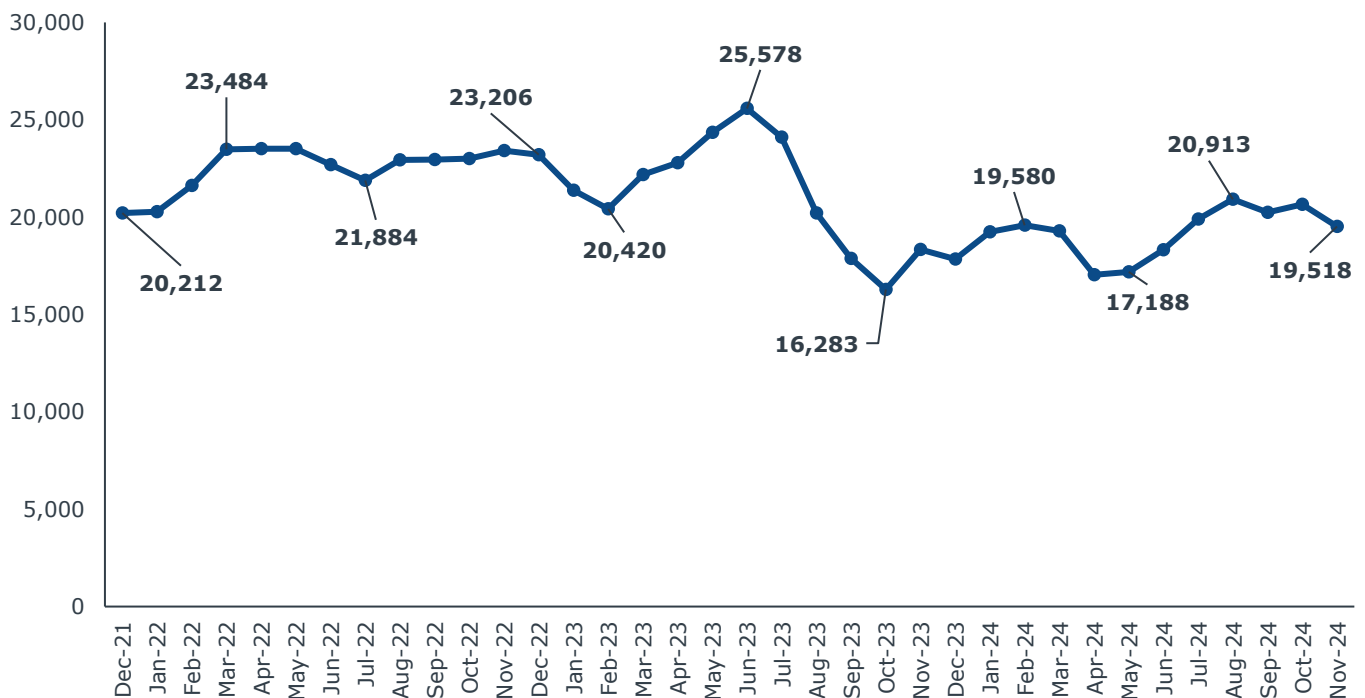
100,083 postings

Relevant Jobs Posted in the Past Year

December 2023 - November 2024, United States Data

Job Postings for Master's-Level Trauma Sciences Professionals

December 2021 - November 2024, United States Data



Source: EAB analysis. Lightcast.

Analysis of Job Postings for Master's-Level Trauma Sciences Professionals in Canada

Employer demand trends suggest a limited labor market for master’s-level trauma sciences professionals in Canada. Between December 2023 and November 2024, employers advertised a low-to-moderate number of relevant job postings (965). From December 2021 to November 2023, relevant employer demand grew by 4.53% on average monthly, outpacing employer demand for all master’s-level professionals (0.56%). Note, relevant employer demand spiked in July 2022 and subsequently fell until January 2023, after which demand experienced comparatively small fluctuations. Ultimately, the total number of postings experienced a net increase overall between December 2021 and November 2024 (i.e., from 93 to 144 postings). Program graduates should expect to enter a limited, albeit overall growing, labor market.

4.53%

Average Monthly Demand Growth

December 2021 - November 2024, Canada Data

- Average monthly growth of one job posting.
- During the same period, demand for all master’s-level professionals grew 0.56%.

187 postings

Average Monthly Demand

December 2021 - November 2024, Canada Data

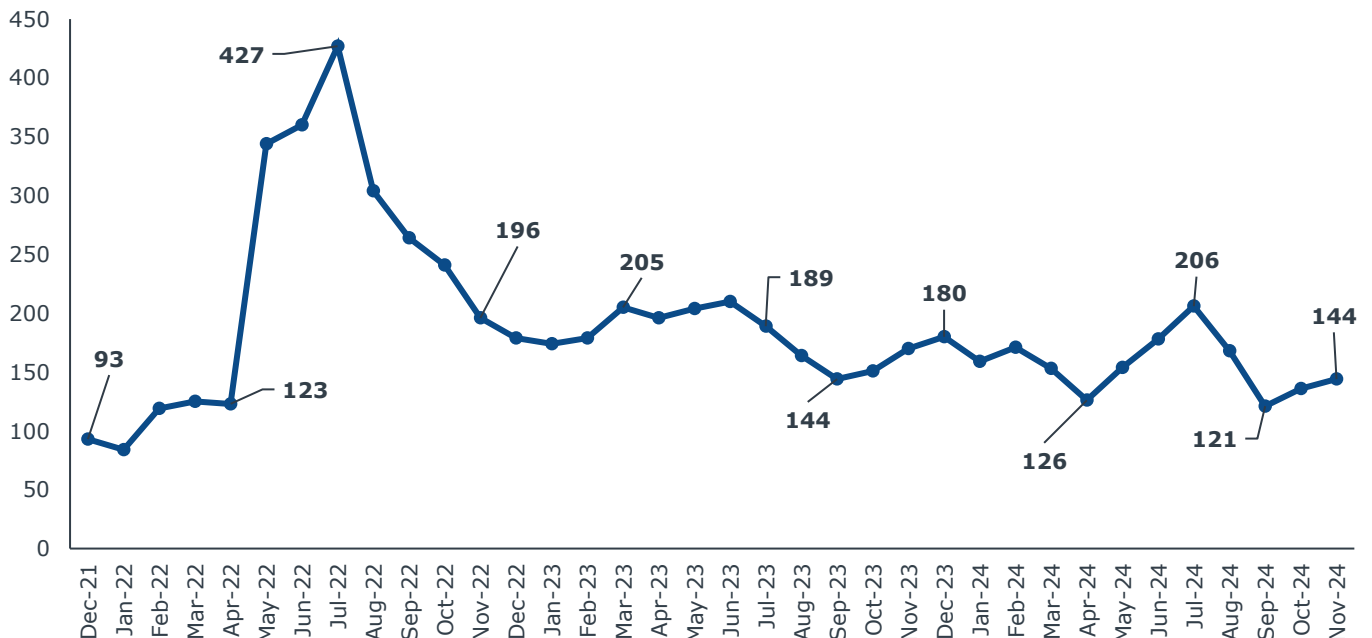
965 postings

Relevant Jobs Posted in the Past Year

December 2023 - November 2024, Canada Data

Job Postings for Master's-Level Trauma Sciences Professionals

December 2021 - November 2024, Canada Data



Source: EAB analysis. Lightcast.

Analysis of Job Postings and Future Employment for Trauma Sciences Professionals in the United States

Employment in all five top relevant occupations is projected to grow faster than average across the next decade, indicating growing opportunities for relevant professionals in the coming years. Note, employment for Nurse Practitioners is expected to grow more than six times faster than all occupational growth. Examples of relevant titles within the Registered Nurses occupation include Emergency Department Registered Nurses, Emergency Room Registered Nurses, and ICU Registered Nurses.

These occupations represent the most common occupations appearing in job postings for postings for professionals with skills related to trauma sciences. Administrators should note, the projections for occupational categories such as 'registered nurses' are not necessarily for jobs specifically seeking trauma science professionals. Instead, projections provide insight into expected growth for occupational categories where graduates with trauma science skills may find employment. Further, projected employment data considers all jobs within an occupation at all degree levels.

Top Occupations Across Job Postings for Master's-Level Trauma Sciences Professionals

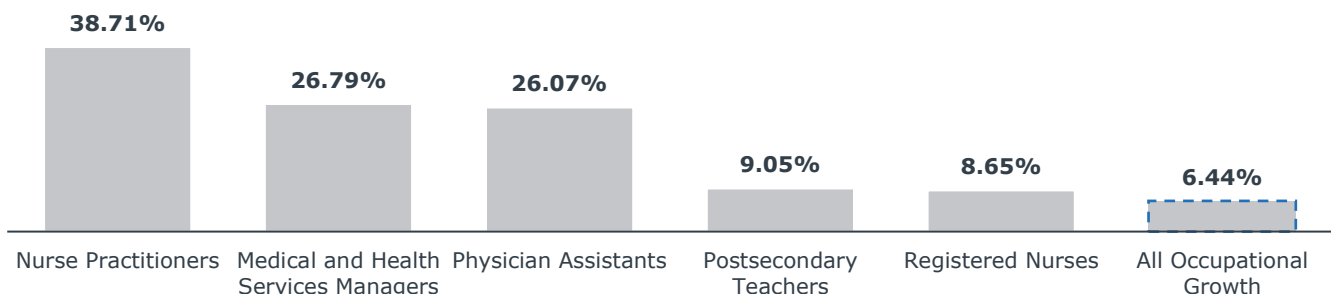
December 2023 - November 2024, United States Data

n = 100,083 job postings

| Occupation | Percent of Relevant Job Postings within Occupation | Number of Relevant Job Postings within Occupation |
|---|--|---|
| Registered Nurses | 41.81% | 41,848 |
| Nurse Practitioners | 28.69% | 28,717 |
| Physician Assistants | 6.78% | 6,789 |
| Medical and Health Services Managers | 6.02% | 6,025 |
| Postsecondary Teachers | 1.41% | 1,411 |
| Health Technologists and Technicians, All Other | 0.91% | 906 |
| Medical Assistants | 0.77% | 775 |
| Managers, All Other | 0.75% | 752 |
| Respiratory Therapists | 0.70% | 705 |
| Emergency Management Directors | 0.61% | 613 |

Projected Employment in Top Occupations¹

2024 - 2034, United States Data



1) Top occupations refer to the occupations in which employers most often seek relevant professionals.

Source: EAB analysis. Lightcast.

Analysis of Job Postings and Future Employment for Trauma Sciences Professionals in **Canada**

Over the next 10 years, employment in all top five relevant occupations is projected to grow faster than all occupational growth, signaling increasing opportunities for relevant professionals in Canada. Employment for Managers in Health Care is expected to grow more than twice as fast as average. Relevant titles within this occupation include Emergency Managers and Directors of Critical Care. Within the University Professors and Lecturers occupation, relevant titles include Medical Outreach Specialists, Paramedic Instructors, and Directors of Respiratory Therapy.

While these occupations represent the most common occupations appearing in job postings for master's-level trauma sciences professionals, the projected employment data considers all jobs within an occupation at all degree levels.

Top Occupations Across Job Postings for Master's-Level Trauma Sciences Professionals

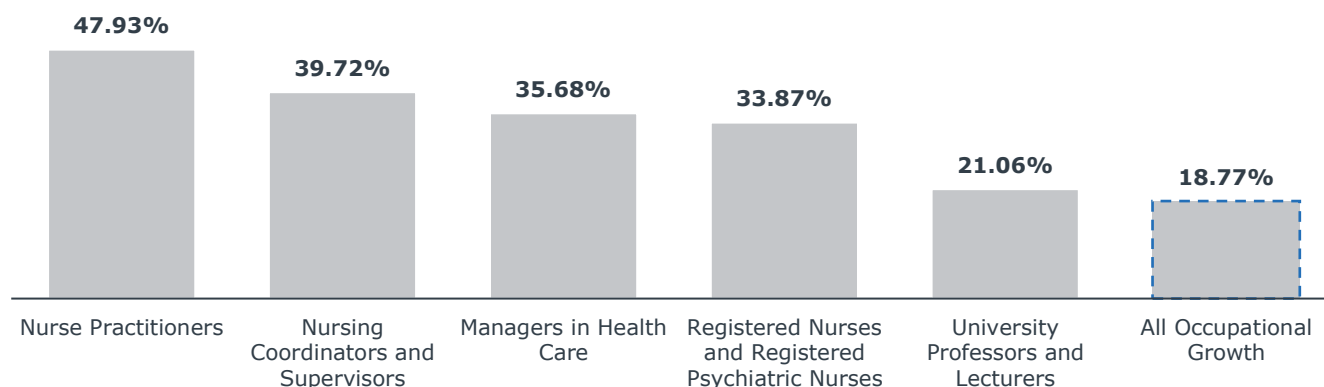
December 2023 - November 2024, Canada Data

n = 965 job postings

| Occupation | Percent of Relevant Job Postings within Occupation | Number of Relevant Job Postings within Occupation |
|---|--|---|
| Registered Nurses and Registered Psychiatric Nurses | 32.44% | 313 |
| Managers in Health Care | 19.90% | 192 |
| Nurse Practitioners | 14.09% | 136 |
| Nursing Coordinators and Supervisors | 3.52% | 34 |
| University Professors and Lecturers | 3.21% | 31 |
| Administrative Officers | 2.90% | 28 |
| Specialists in Clinical and Laboratory Medicine | 2.18% | 21 |
| General Office Support Workers | 1.87% | 18 |
| Other Managers in Public Administration | 1.87% | 18 |
| College and Other Vocational Instructors | 1.87% | 18 |

Projected Employment in Top Occupations¹

2021 - 2031, Canada Data



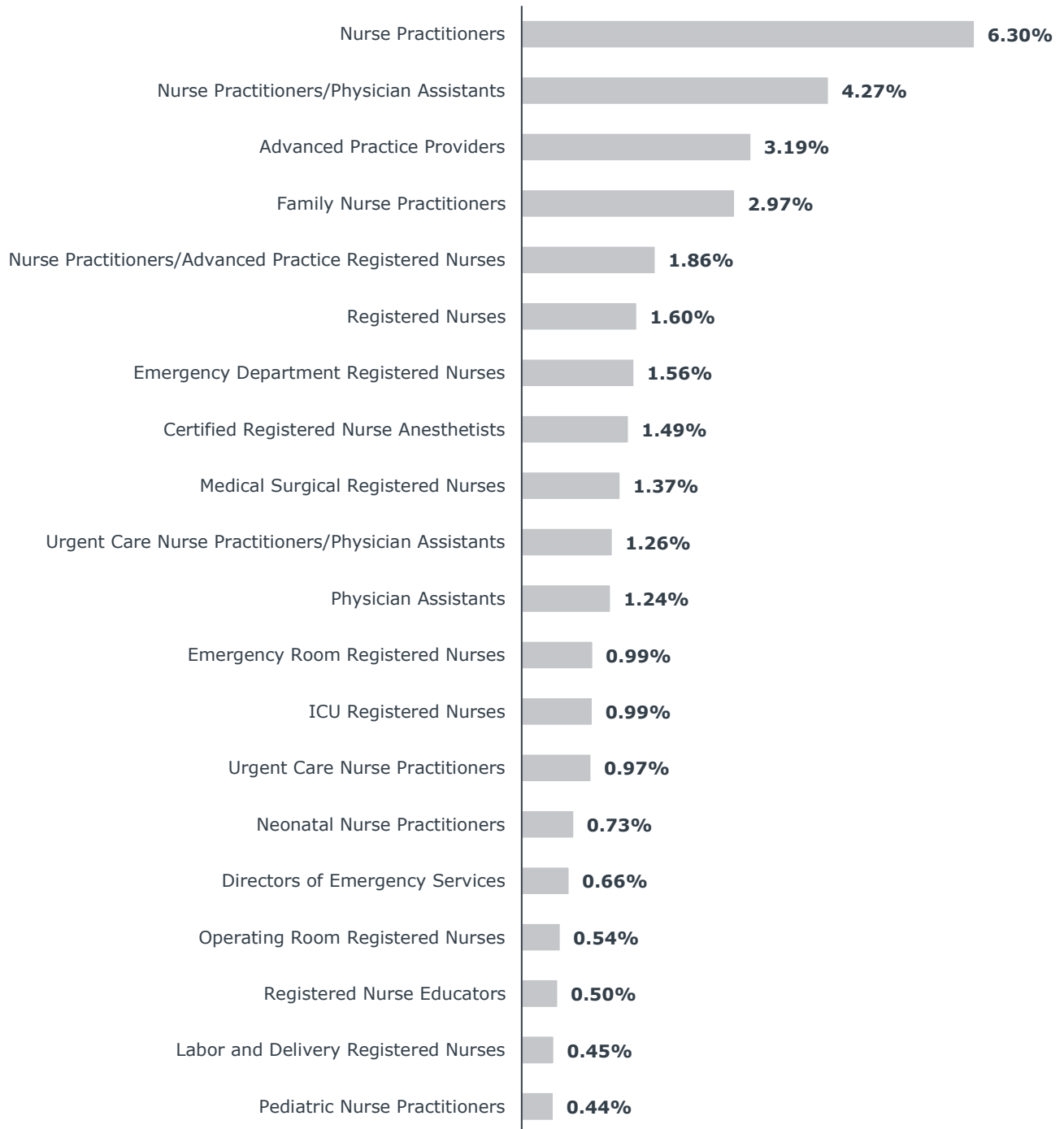
1) Top occupations refer to the occupations in which employers most often seek relevant professionals.

Source: EAB analysis. Lightcast.

Top Titles in Job Postings for Master's-Level Trauma Sciences Professionals

December 2023 - November 2024, United States Data

n = 100,083 job postings

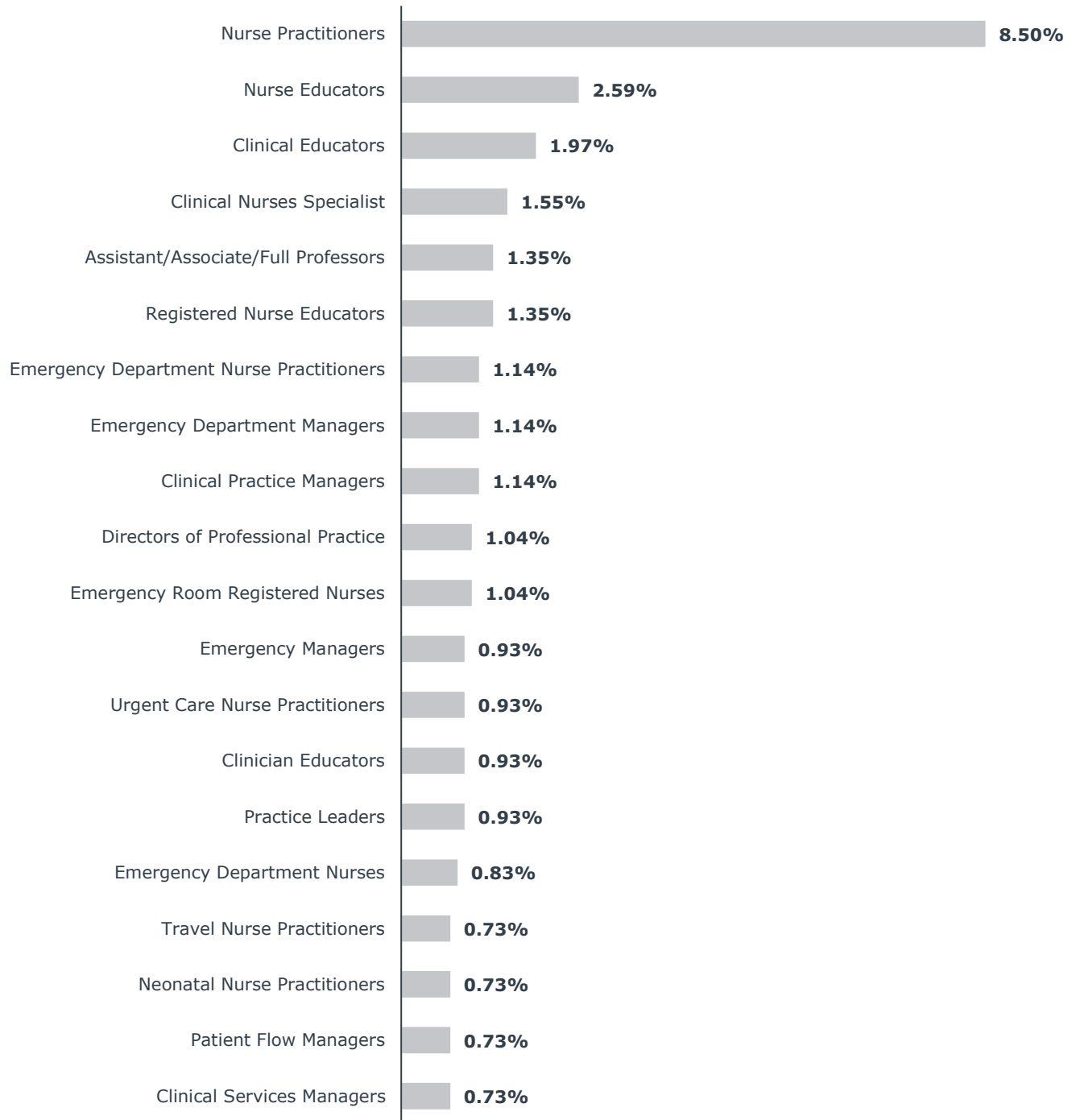


Source: EAB analysis. Lightcast.

Top Titles in Job Postings for Master's-Level Trauma Sciences Professionals

December 2023 - November 2024, Canada Data

n = 965 job postings

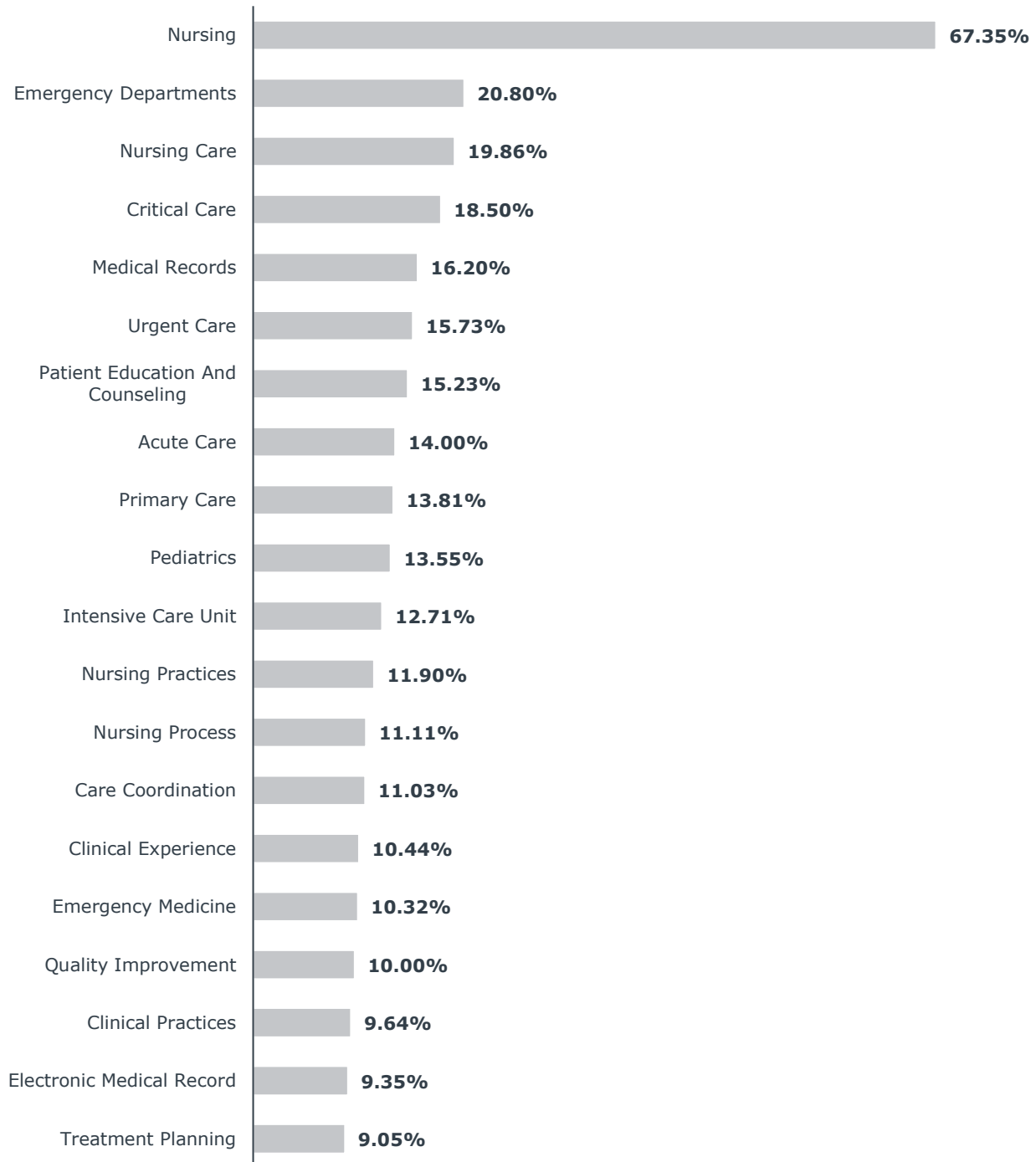


Source: EAB analysis. Lightcast.

Top Skills in Job Postings for Master's-Level Trauma Sciences Professionals

December 2023 - November 2024, United States Data

n = 100,083 job postings

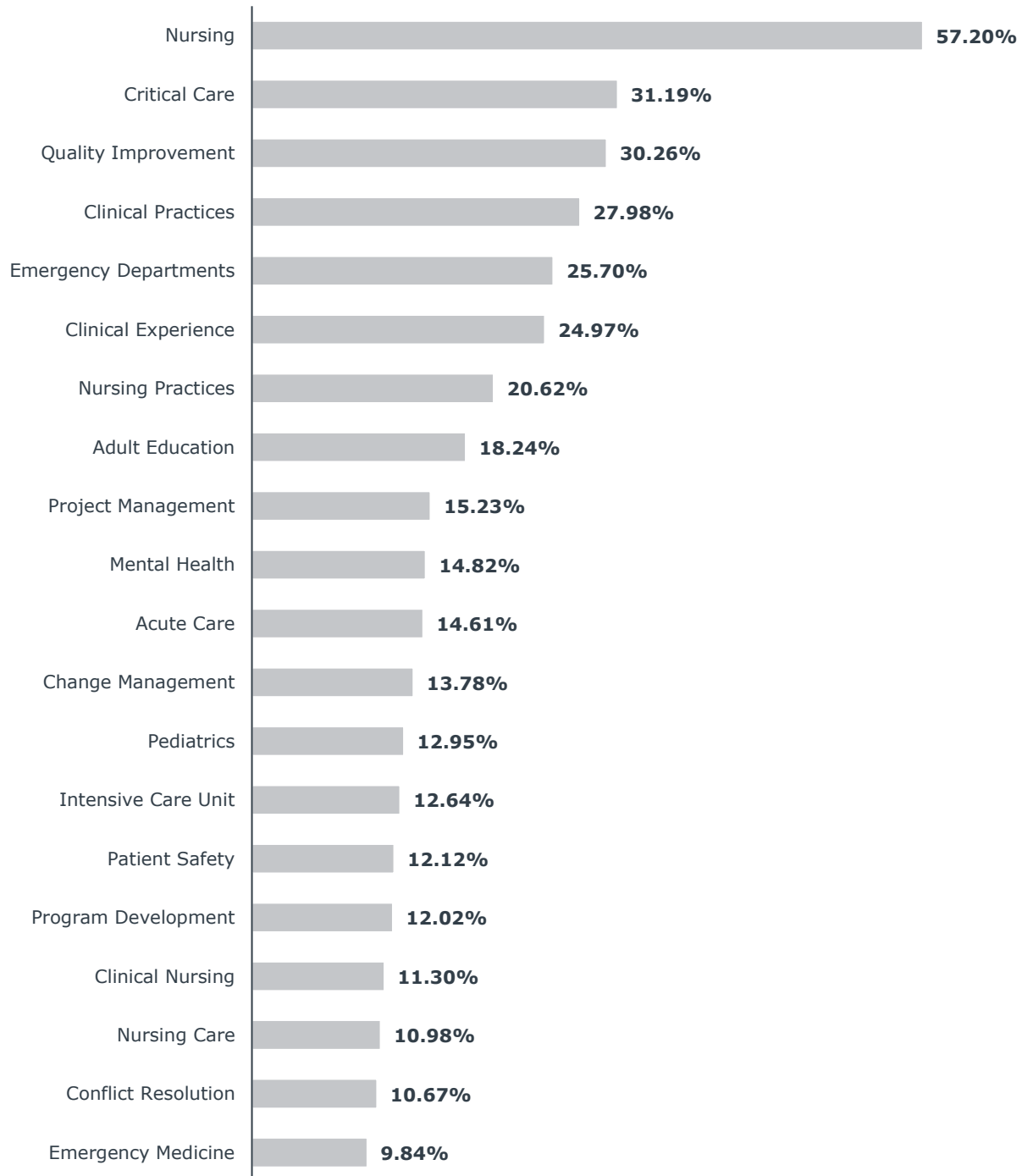


Source: EAB analysis. Lightcast.

Top Skills in Job Postings for Master's-Level Trauma Sciences Professionals

December 2023 - November 2024, Canada Data

n = 965 job postings

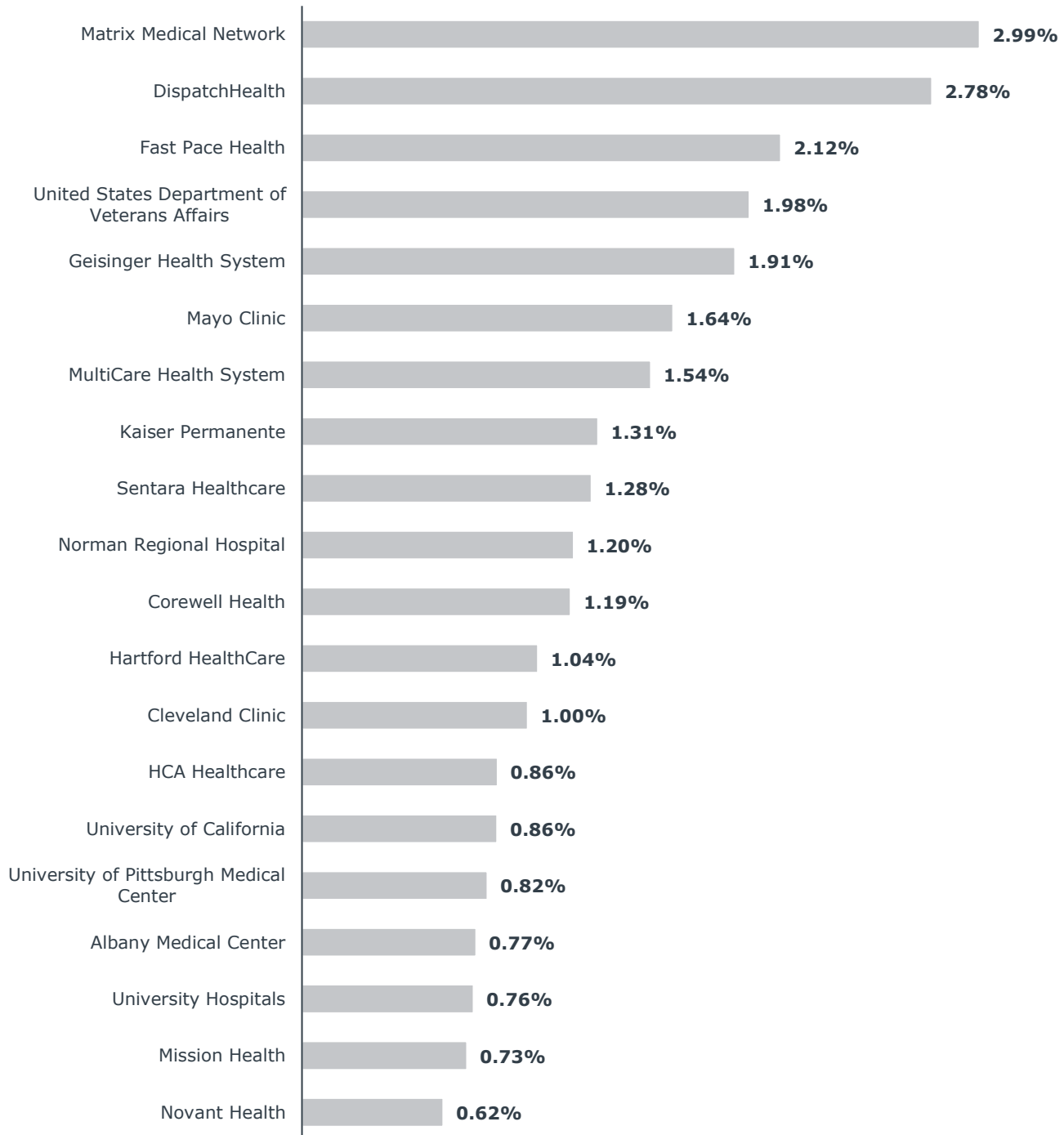


Source: EAB analysis. Lightcast.

Top Employers in Job Postings for Master's-Level Trauma Sciences Professionals

December 2023 - November 2024, United States Data

n = 100,083 job postings

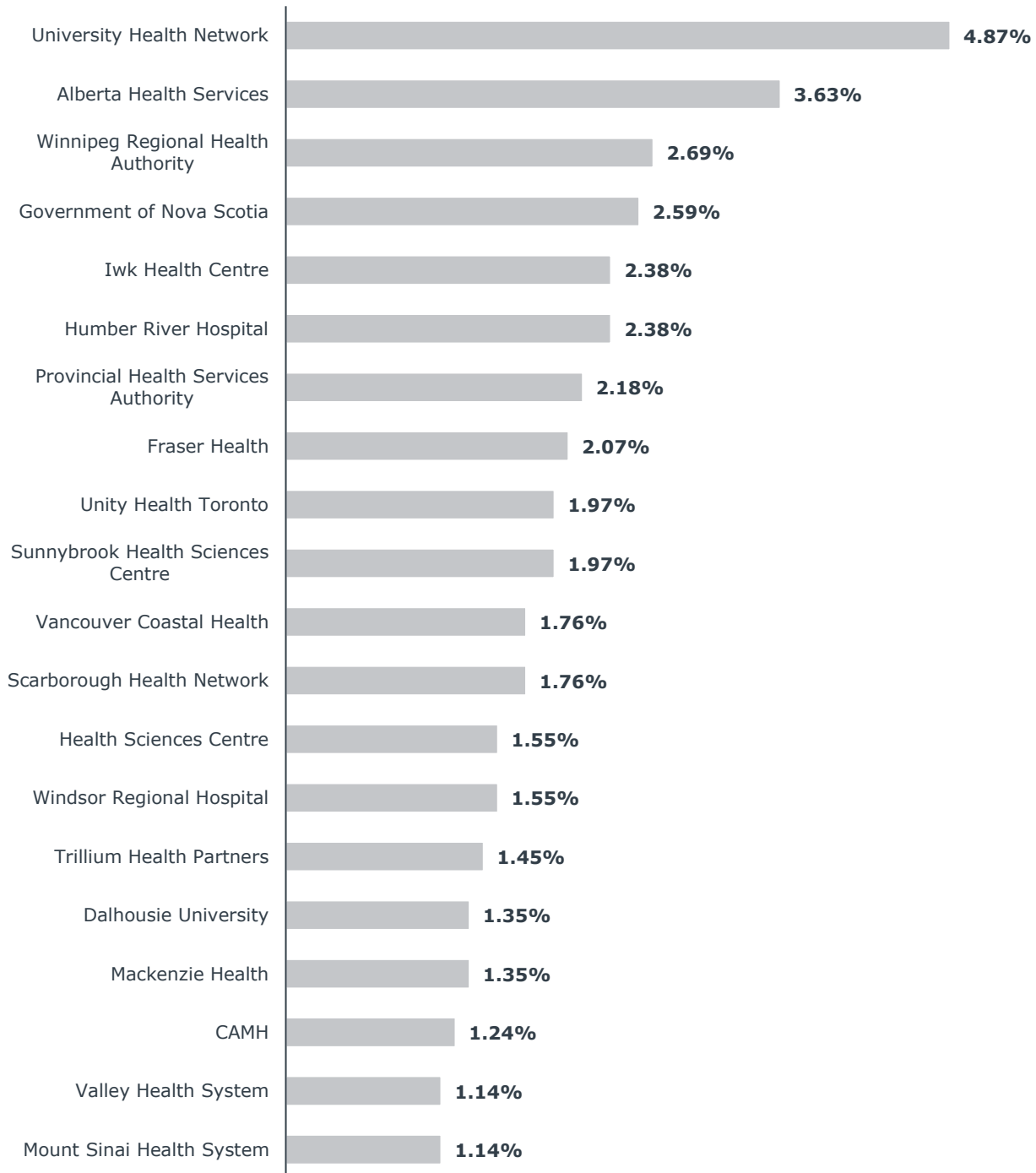


Source: EAB analysis. Lightcast.

Top Employers in Job Postings for Master's-Level Trauma Sciences Professionals

December 2023 - November 2024, Canada Data

n = 965 job postings

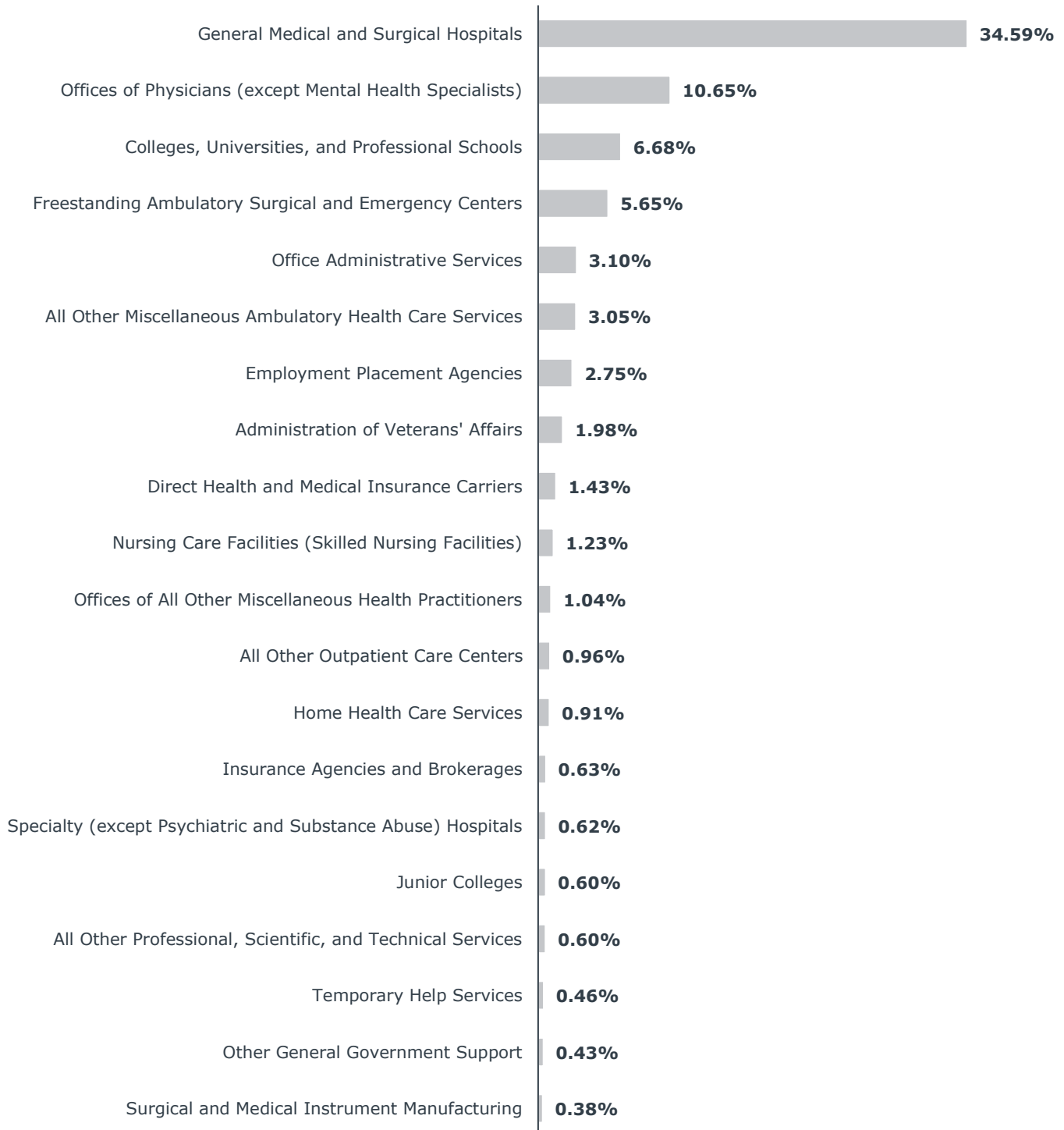


Source: EAB analysis. Lightcast.

Job Postings Across Industries for Master's-Level Trauma Sciences Professionals

December 2023 - November 2024, United States Data

n = 100,083 job postings

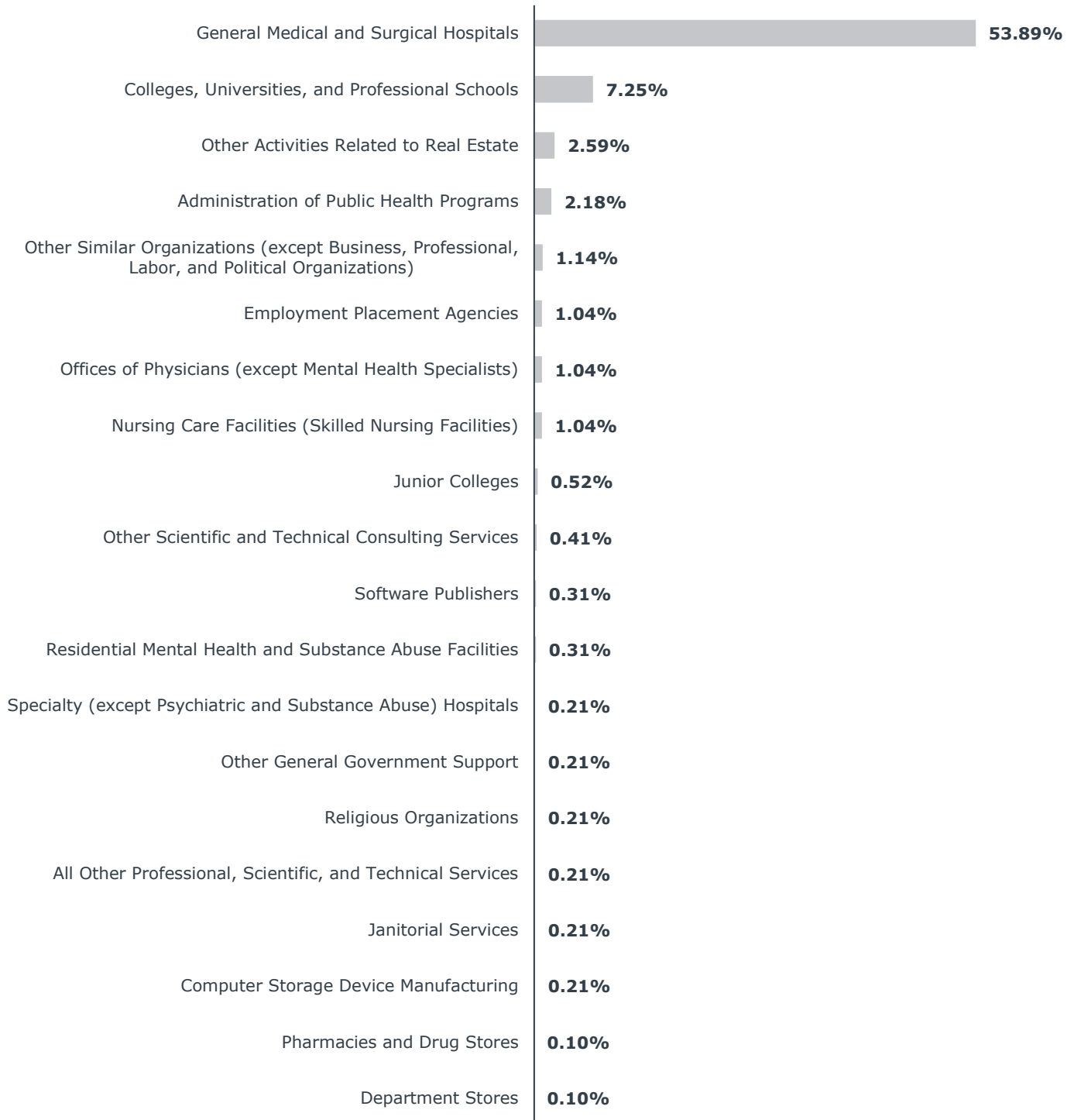


Source: EAB analysis. Lightcast.

Job Postings Across Industries for Master's-Level Trauma Sciences Professionals

December 2023 - November 2024, Canada Data

n = 965 job postings

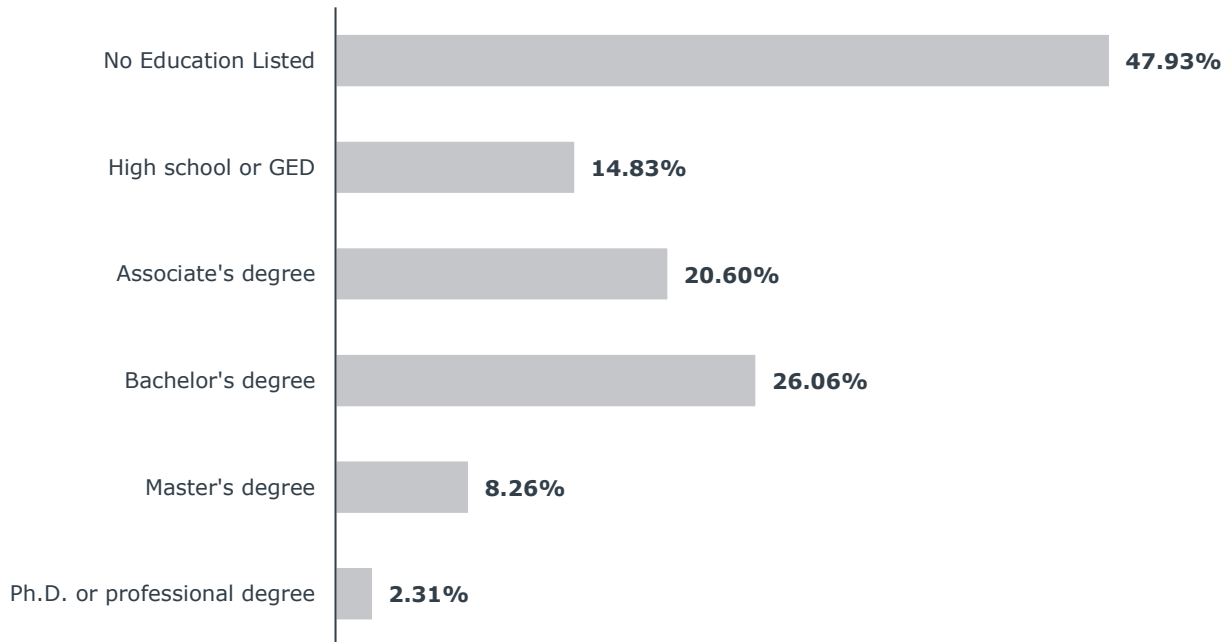


Source: EAB analysis. Lightcast.

Education Levels Requested of Trauma Sciences Applicants¹

December 2023 - November 2024, United States Data

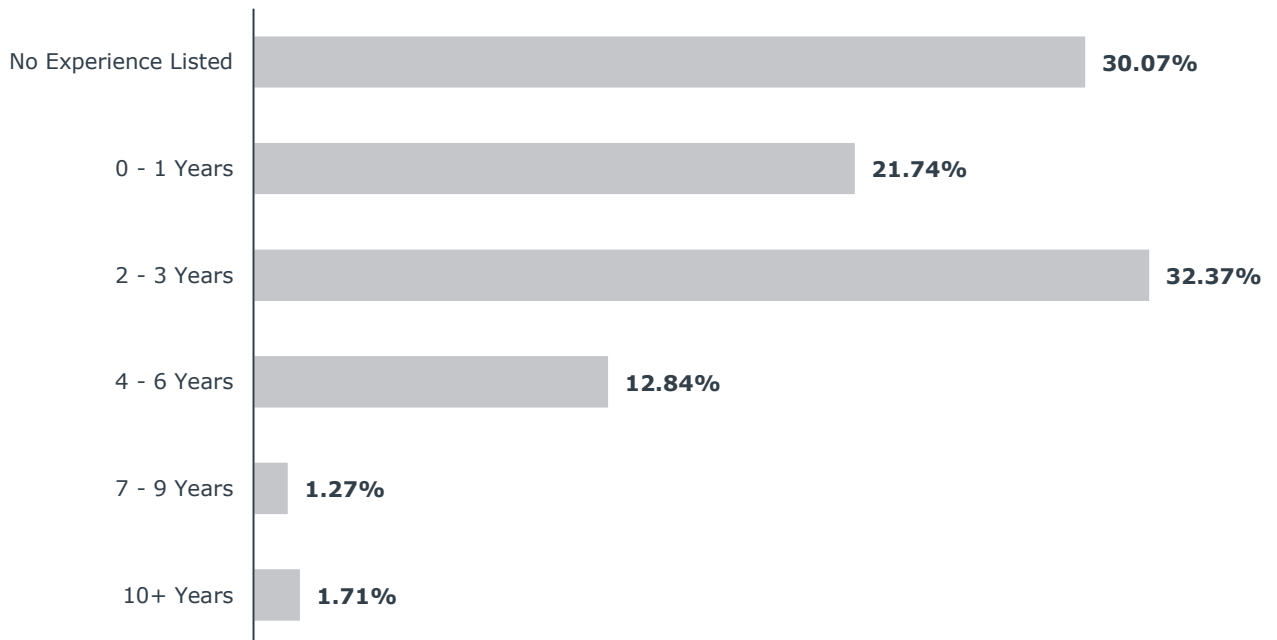
n = 1,211,228 job postings



Experience Levels Requested of Master's-Level Trauma Sciences Applicants

December 2023 - November 2024, United States Data

n = 100,083 job postings

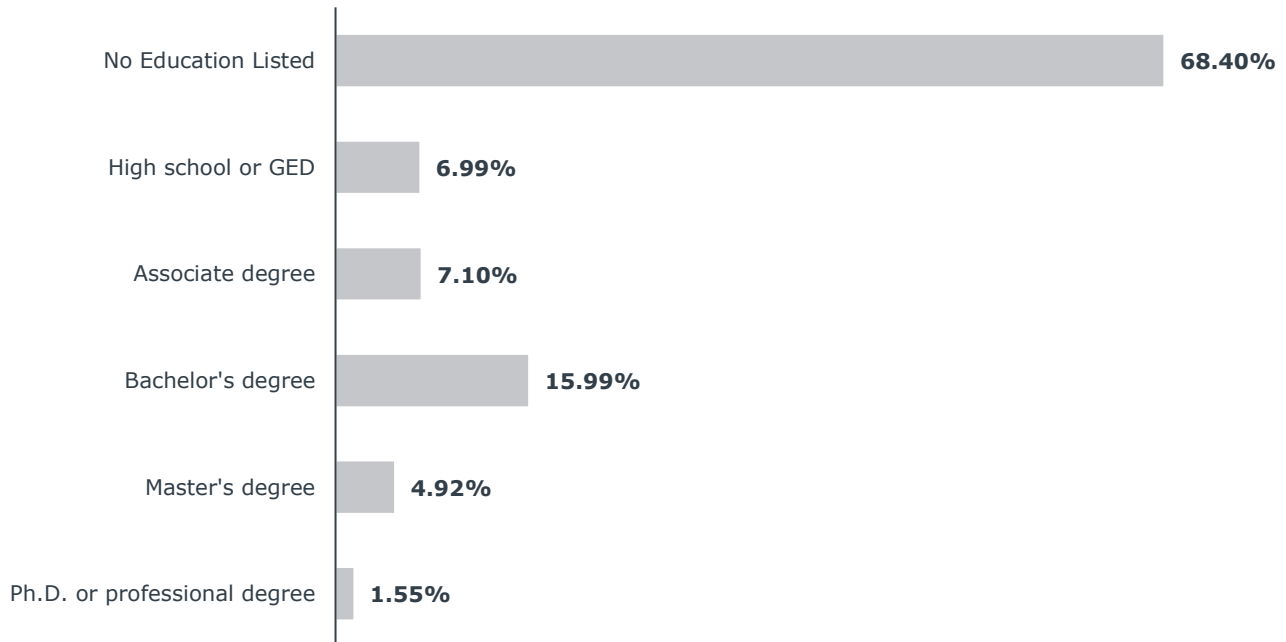


1) The n-value reflects the number of job postings requesting any degree level trauma sciences applicants rather than the number of postings requesting only those at the focus degree level.

Education Levels Requested of Trauma Sciences Applicants¹

December 2023 – November 2024, Canada Data

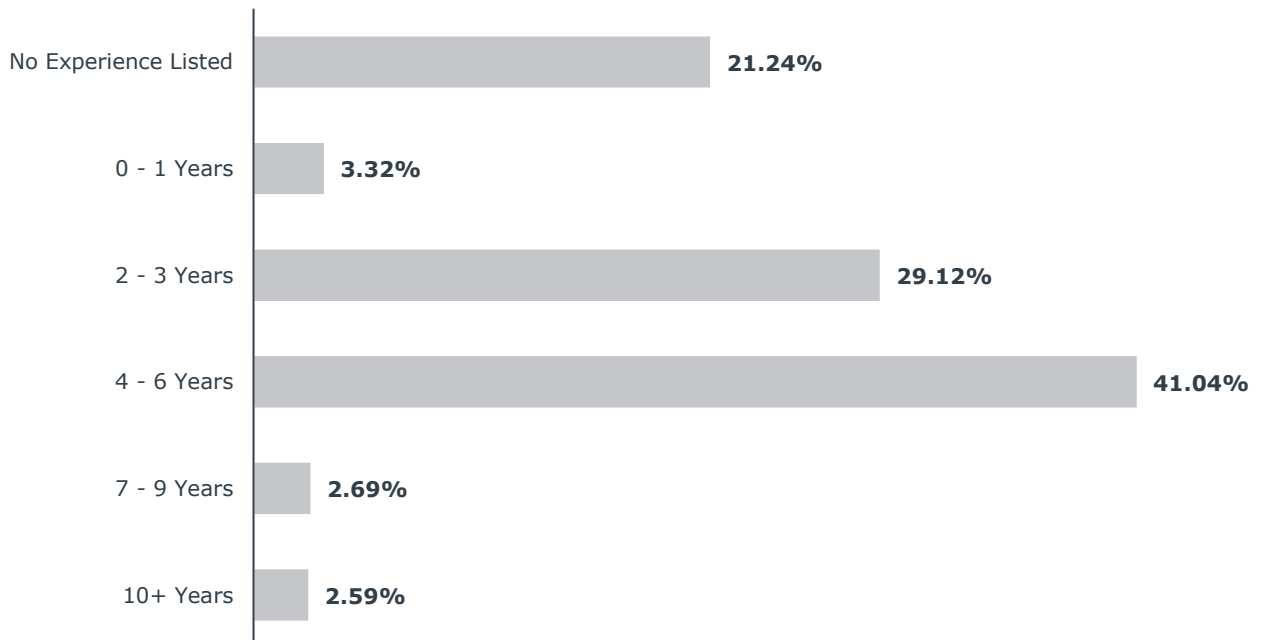
n = 19,598 job postings



Experience Levels Requested of Master's-Level Trauma Sciences Applicants

December 2023 – November 2024, Canada Data

n = 965 job postings



1) The n-value reflects the number of job postings requesting any degree level trauma sciences applicants rather than the number of postings requesting only those at the focus degree level.