ATSSL ANNUAL REPORT 2024–2025

Cumming School of Medicine
University of Calgary

Comprehensive overview of the year's progress and achievements.

Introduction

The 2024–2025 academic year marked another period of growth, innovation, and collaboration for the Advanced Technical Skills Simulation Laboratory (ATSSL). As we supported learners across the University of Calgary (UCalgary), primarily the Cumming School of Medicine (CSM) and beyond, ATSSL continued to deliver high-quality simulation-based education, technical training and research support.

Through continued collaboration with faculty, residents, students, and clinical educators, we provided safe, realistic, and high-value learning experiences that reflect our commitment to excellence in simulation-based medical education. We are proud of the progress made this year and grateful to the many individuals and teams who contribute to ATSSL's success.

The following report provides an overview of our activities, achievements, and impact during 2024–2025, highlighting the ongoing evolution of simulation as a vital part of medical education and research at the University of Calgary.

About Us

The **ATSSL** is a state-of-the-art facility supporting simulation-based medical education for learners across **UCalgary** and **Alberta Health Services (AHS)**.

In **2024–2025**, ATSSL completed a **full renovation of the Clinical Skills Simulation Laboratory**, temporarily relocating simulation activities to classrooms for most of the year. Despite these transitions, simulation training continued with little interruption – demonstrating the team's adaptability and commitment to excellence.

ATSSL comprises three specialized labs – **Surgical Skills**, **Clinical Skills,** and **Special Procedures** – and oversees the **Live Animal Surgical Laboratory**, which provides advanced surgical training for senior residents using porcine and ovine models. The department also administers the **Southern Alberta Body Donation Program,** supporting education, patient safety, and clinical competence.

LOCATIONS:

- *Clinical Skills Simulation Laboratory (CSL) – HSC G820*
- *Surgical Skills Simulation Laboratory (SSL) – HRIC BA01*
- *Special Procedures Laboratory (SPL) – HSC B763B*
- *Health Science Animal Resource Centre (HSARC)– HSC B301*
- *Southern Alberta Body Donation Program (BDP) – HSC B723*

Vision & Mission

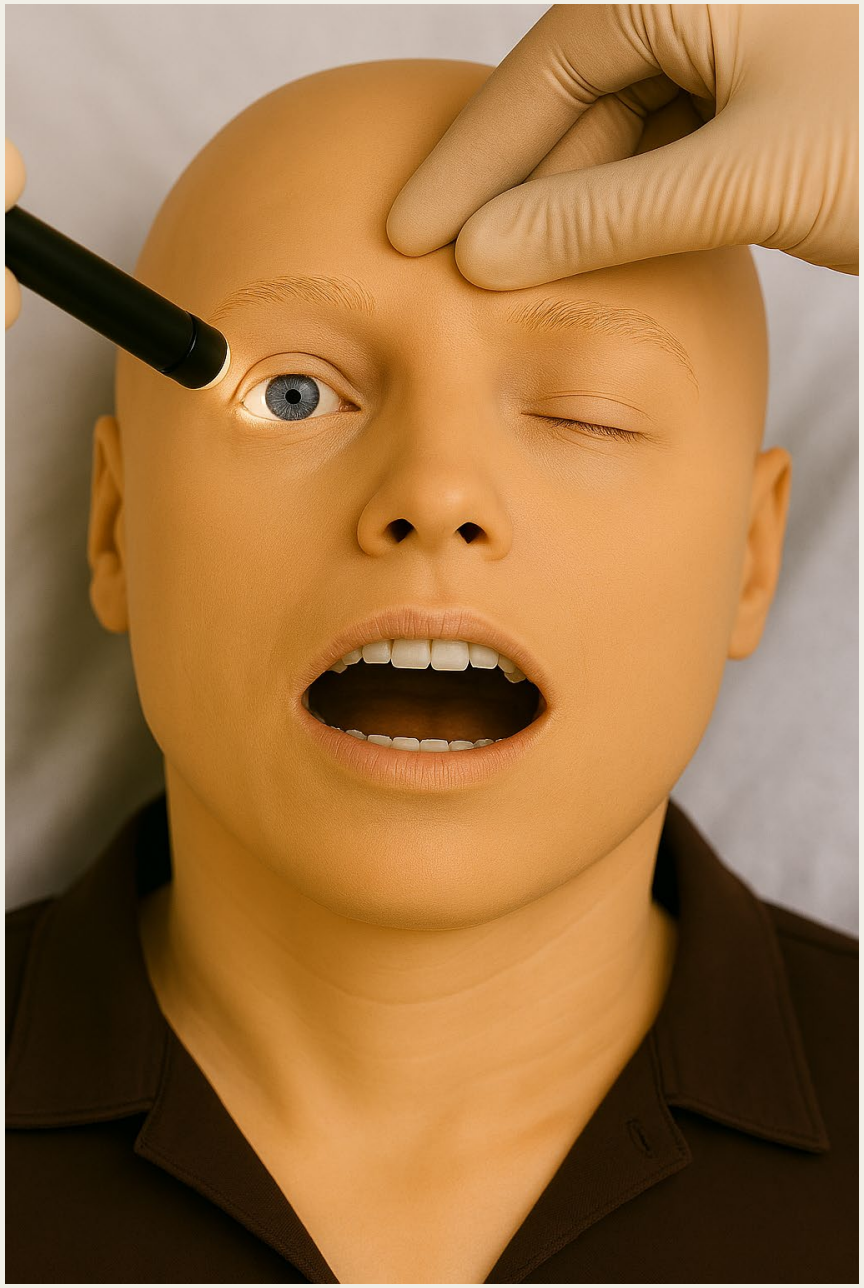
VISION

Global leader in innovative simulated education and assessment for health professionals to improve patient outcomes and research.

MISSION

The ATSSL is committed to providing innovative and interprofessional simulation-based medical education and research.

We continuously aim to produce effective, confident, and safe medical and surgical professionals while improving patient safety and quality of care.



Strategic Goals

Simulation-Based Medical Education

Delivered over 2,700 hours of simulation-based training across 650+ sessions, engaging more than 17,800 learner encounters. Expanded interdisciplinary and longitudinal training experiences while maintaining program quality through adaptive delivery during major facility renovations.

Research and Scholarship Support

Provided logistical and technical support for ongoing simulation-focused research and innovation projects. Continued collaboration with faculty to integrate scholarly inquiry into simulation practices, including study design, data collection, and dissemination support.

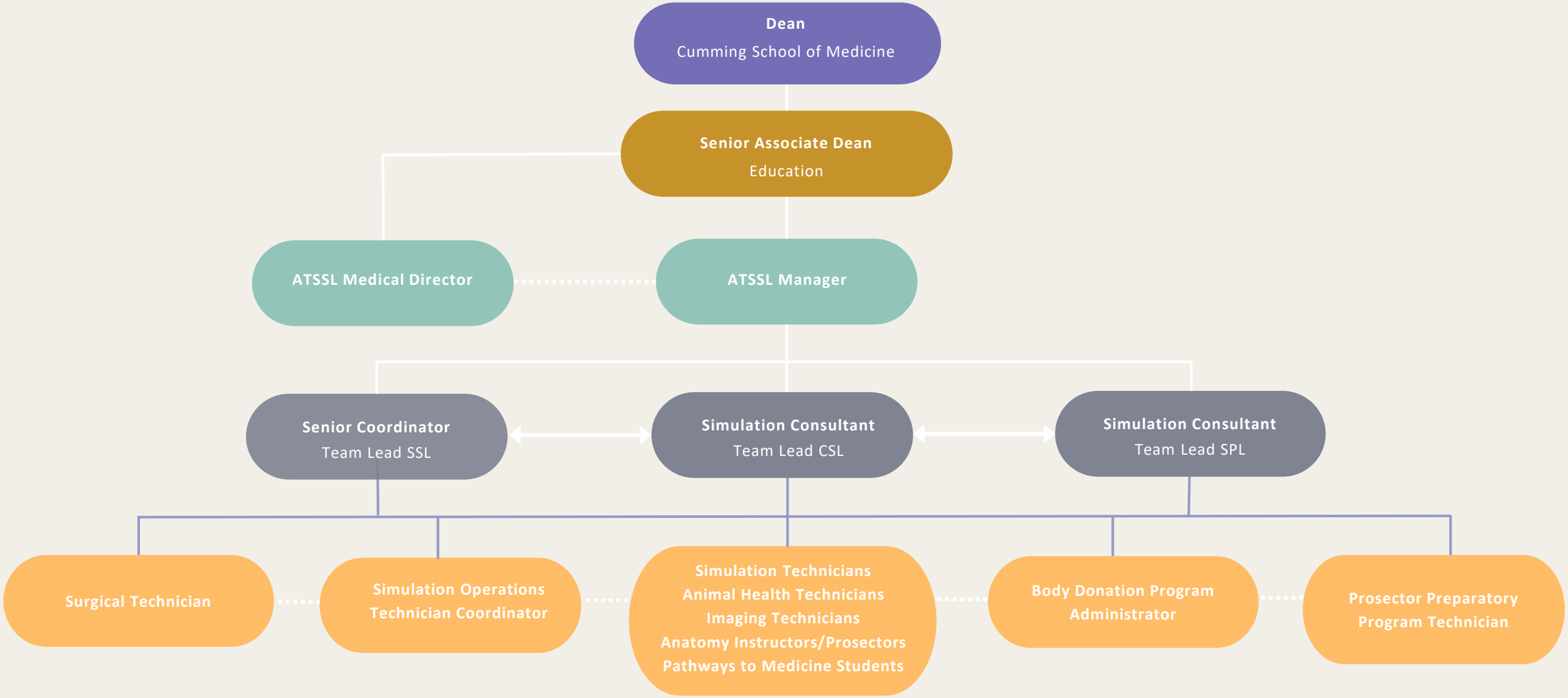
Accreditation and Patient Safety

Sustained Royal College accreditation standards through continuous quality improvement, standardized training delivery, and active engagement in patient safety initiatives. Supported hospital and residency programs with targeted simulations addressing clinical risk areas and procedural competence.

Cost-Effective and Visible

Maximized operational efficiency within a $1,374,902 budget, maintaining consistent output despite space limitations. Enhanced visibility through program metrics, stakeholder updates, and integration within the Cumming School of Medicine's educational strategy, reinforcing ATSSL's value and impact in advancing safe patient care.

Governance and Organizational Structure



Financials

EXECUTIVE SUMMARY

The ATSSL's operations are supported by CSM funding and external revenue; however, CSM funding alone does not cover the full cost of running the facility. To meet annual budget requirements, the ATSSL remains dependent on revenue generated from external users and industry-sponsored events, which contributed $469,461 in 2024–25. For the fiscal year, CSM provided **$1,029,581**, while external revenue added **$345,321**, resulting in a total budget of **$1,392,393**. Total expenditures for 2024–25 reached **$1,374,902**, with a favourable variance of **$17,491** due to a maternity leave.

Funds are used for staffing, equipment, materials and supplies, warranties, and preventive maintenance. Overall, expenses have increased as a result of negotiated salary adjustments, live-animal surgical labs, and rising costs for supplies and equipment maintenance.

Undergraduate Medical Education (UME), Postgraduate Medical Education (PGME), the Bachelor of Health Sciences (BHSc), Master of Physician Assistant Studies (MPAS) and Graduate Science Education (GSE)—as well as members of AHS clinical departments and programs, are classified as internal users and are not charged for access to the ATSSL. Internal users, however, are charged for supplies, disposables, and limited-use items such as replacement parts for procedural simulators.

Learners identified as external users and industry clients are charged an hourly lab rate, along with the cost of supplies and any required staffing hours, under a fee structure outlined in the ATSSL Use of Space and Equipment agreement. External revenue is retained in a separate UCalgary IRNA account and used to support additional staff, equipment maintenance, refurbishment or replacement, and educational opportunities, including conference travel for staff.

FISCAL YEAR BUDGET
2024-25
$1,392,393

CSM FUNDING
2024-25
$1,029,581

EXTERNAL REVENUE CONTRIBUTION
2024-25
$345,321

FISCAL YEAR 2024-25 EXPENDITURES	
Human Resources	$1,144,770
Materials & Supplies	$104,091
Warranties/Minor Equipment/Licensing & Accreditation Fees	$38,954
Body Donation Program	$81,248
Travel & Education	$5,839
TOTAL 2024-25	$1,374,902

Current Updates

Clinical Skills Laboratory Renovation Completed:

Major modernization completed 2024–25, improving simulation fidelity and learner flow.

New Program: Master of Physician Assistant Studies (MPAS)

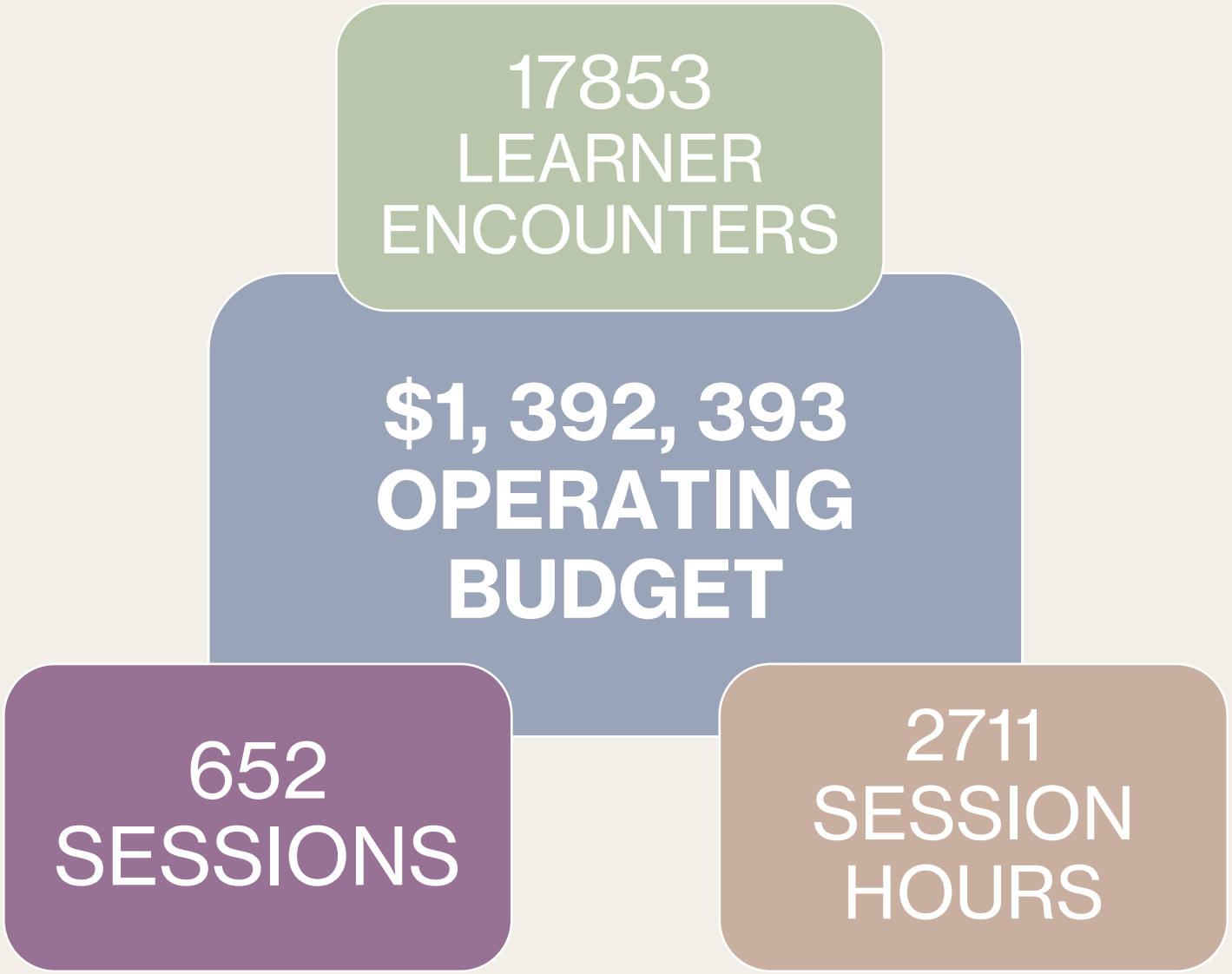
The first cohort began simulation-based medical education in the ATSSL in August 2024. A significant portion of their curriculum now occurs within our facilities, reflecting ATSSL's expanding role in supporting new and evolving health-care programs.

New Equipment:

Sonosite PX ultrasound system – funded through a PGME Simulation Grant

OB-GYN Vimedix Simulator – provided by AHS eSIM

HeartWorks Cardiac Ultrasound Simulator – acquired through PGME



Highlights

During the **2024–2025** reporting period, the ATSSL facilitated **652 sessions**, supporting **17,853 learner encounters** over **2,711 session hours**, which takes approximately **4,100 staff hours** to setup and takedown.

The **operating budget** of **$1,392,393** is consistent with previous years.

Overall activity levels remained consistent in comparison to 2023–2024, despite **renovations of the CSL** that temporarily limited capacity during last three fiscal quarters (Q2-Q4). During this period, the SPL was also unavailable for teaching, as it was repurposed for equipment storage to accommodate the renovation.

This trend highlights the need for sustained investment to support future growth.

Usage Statistics Overview (2018-2025)

Over the past seven years, activity within the ATSSL has demonstrated **strong growth and resilience**, particularly following the significant disruptions of 2020–21. While the SARS-CoV-2 pandemic and subsequent facility renovations temporarily limited operations, the ATSSL has since surpassed pre-pandemic utilization levels across nearly all indicators.

Between 2018–19 and 2024–25, the total number of sessions, learner encounters, and instructional hours have each **increased** by approximately **10–20%**, despite a static operating budget and periods of reduced capacity.

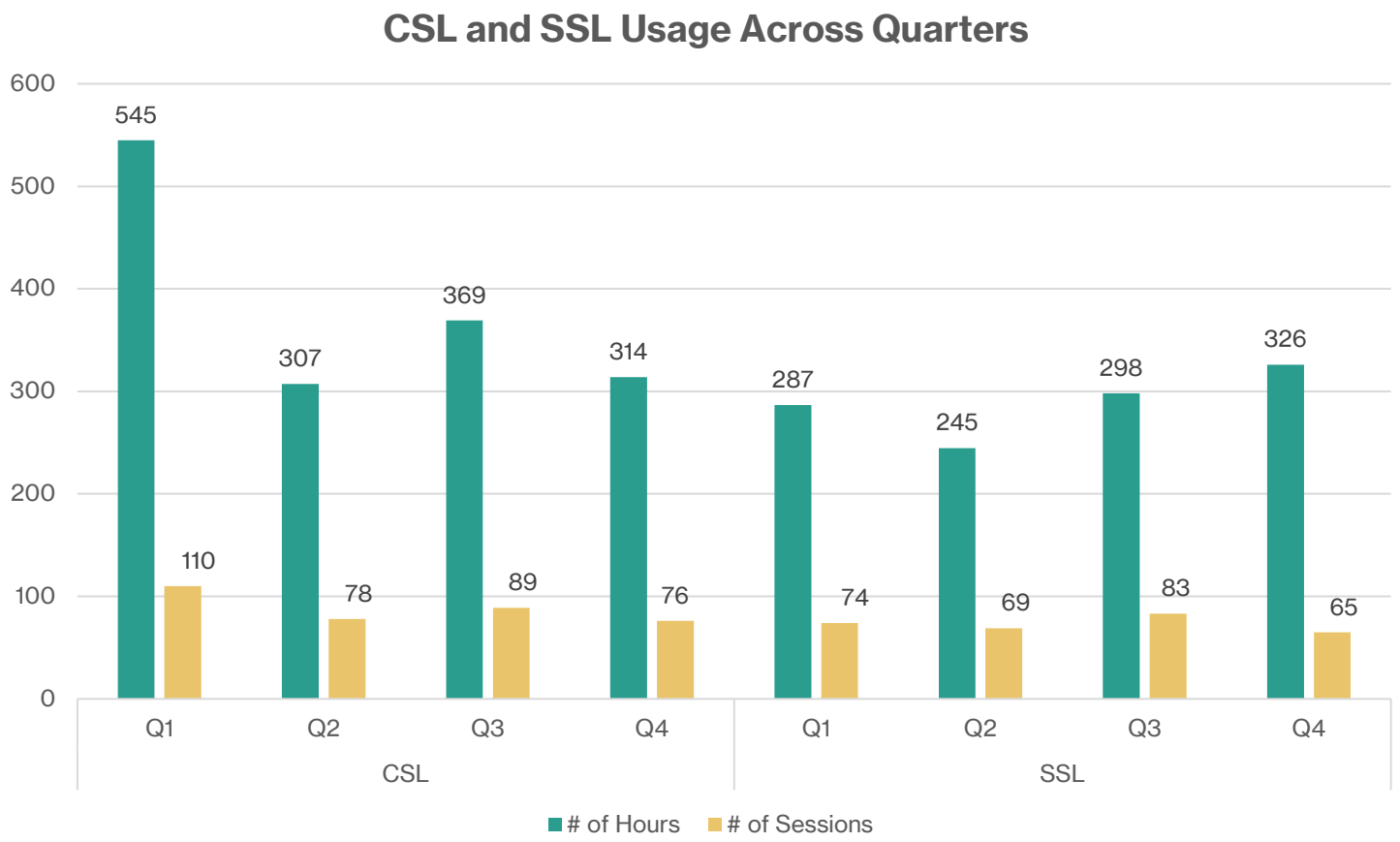
This **upward trend** reflects growing institutional reliance on simulation-based education, steady expansion of clinical and surgical training programs, and the lab's continued ability to adapt to evolving educational needs through strategic coordination and resource management.

ATSSL Usage 2024-2025 Summary

Lab	# of Sessions	# of Hours	# of Learner Encounters
Clinical Skills Lab (CSL)	354	7,486	1535
Surgical Skills Lab (SSL)	291	10,284	1,155
Special Procedures Lab (SPL)	7	83	21
Total	**652**	**17853**	**2711**

Despite renovation-related constraints, all ATSSL labs were very active delivering simulation-based medical education. The **SSL** accounted for the majority of total session hours, reflecting its central role in core teaching and assessment activities. The **CSL** maintained steady use through specialized skills and procedural training, while the **SPL** experienced reduced scheduling but demonstrated adaptability as space was temporarily repurposed to support program continuity.

2024-2025 Quarterly Trends

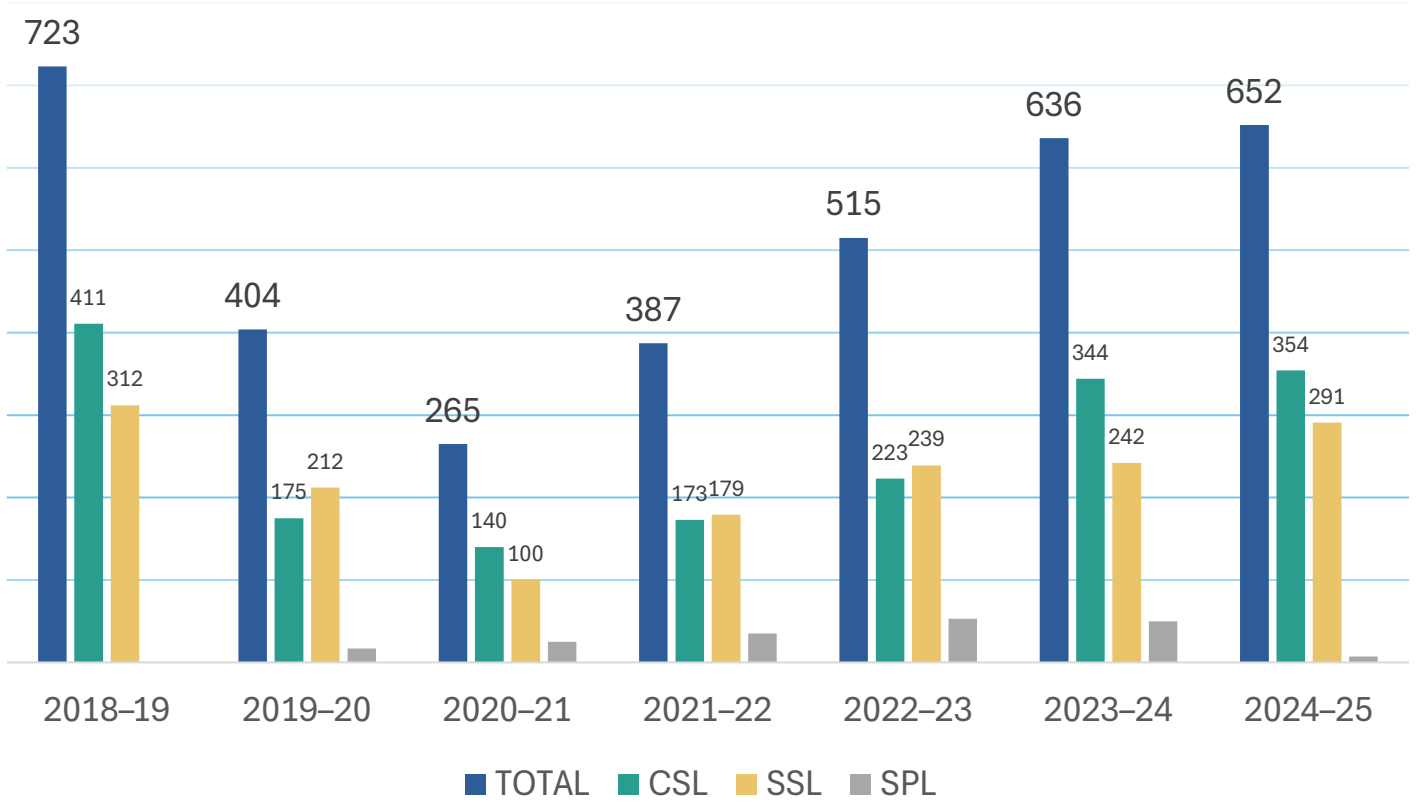


The data highlights usage patterns across four quarters.

The **CSL** recorded its usage with **1535 hours** over **354 sessions**. Activity peaked in Q1, then declined in Q2, slightly increased in Q3, and held steady in Q4.

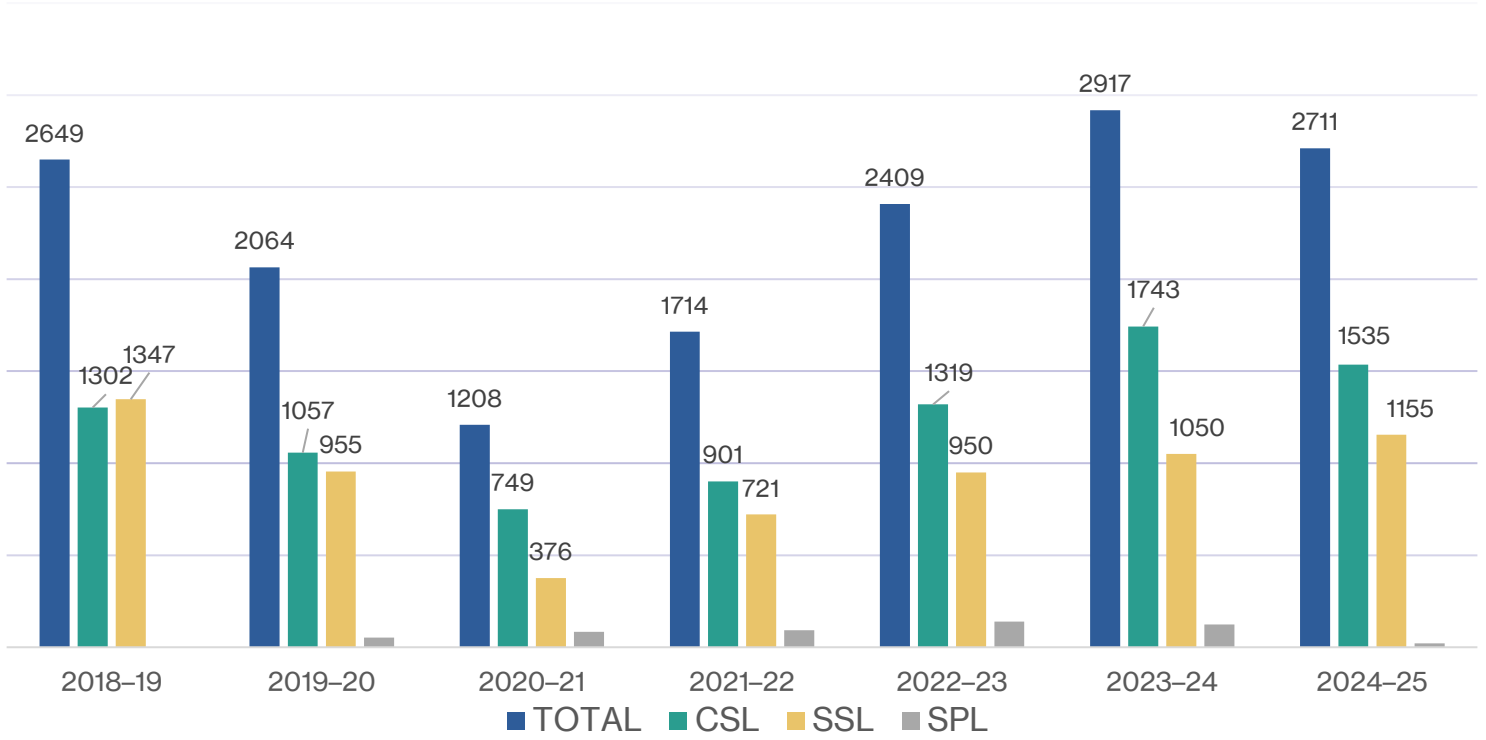
The **SSL** had **1155 hours** across **291 sessions**, showing a progressive increase in hours from Q1 to Q4, suggesting growing engagement throughout the year.

ATSSL Trend - Number of Sessions by Lab (2018–2025)



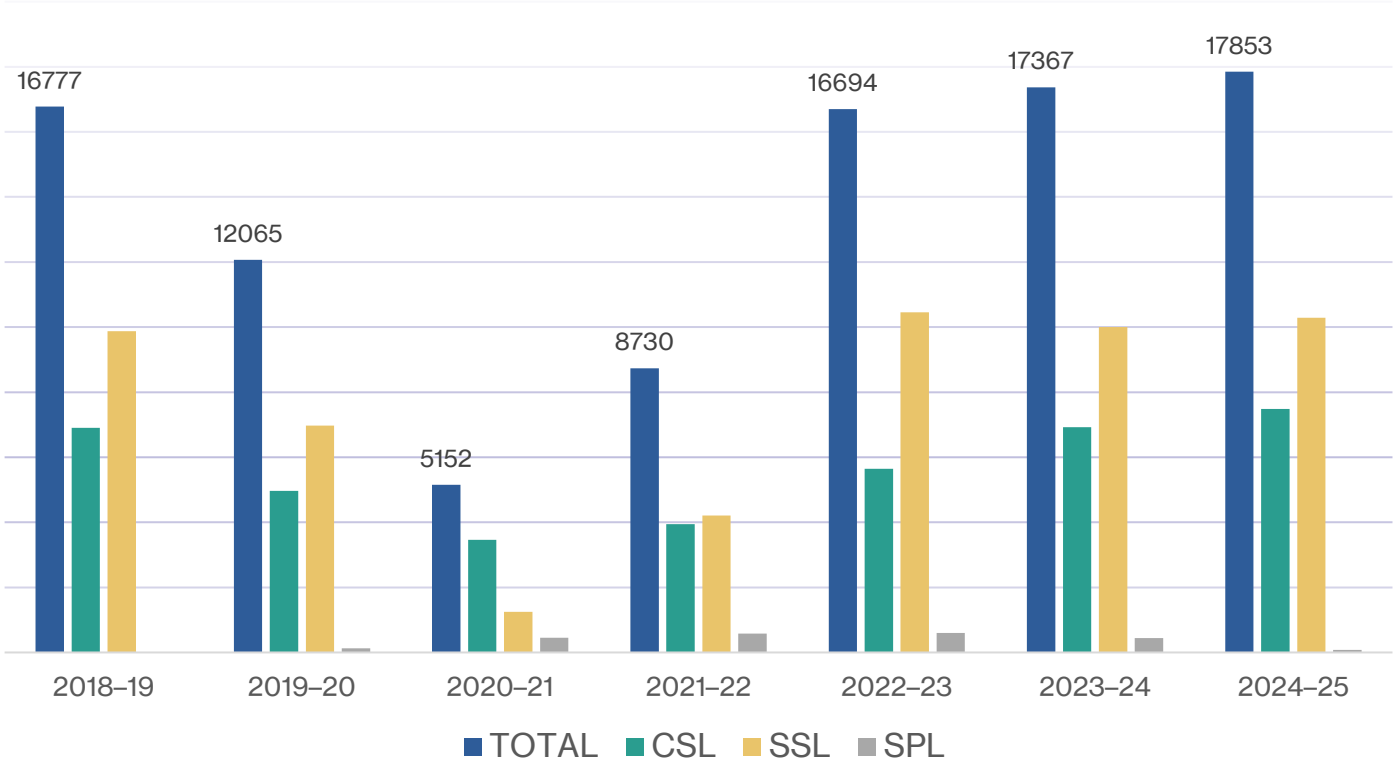
The number of sessions rose by **146%** since the 2020–21 SARS-CoV-2 downturn, reaching **652 in 2024–25**. Although CSL and SPL capacities were reduced for much of the year due to the renovation, simulation delivery continued to be consistent through adaptive scheduling and use of alternative spaces. The data reflect both operational resilience and increasing efficiency in program delivery.

ATSSL Trend - Sum of Session Hours by Lab (2018–2025)



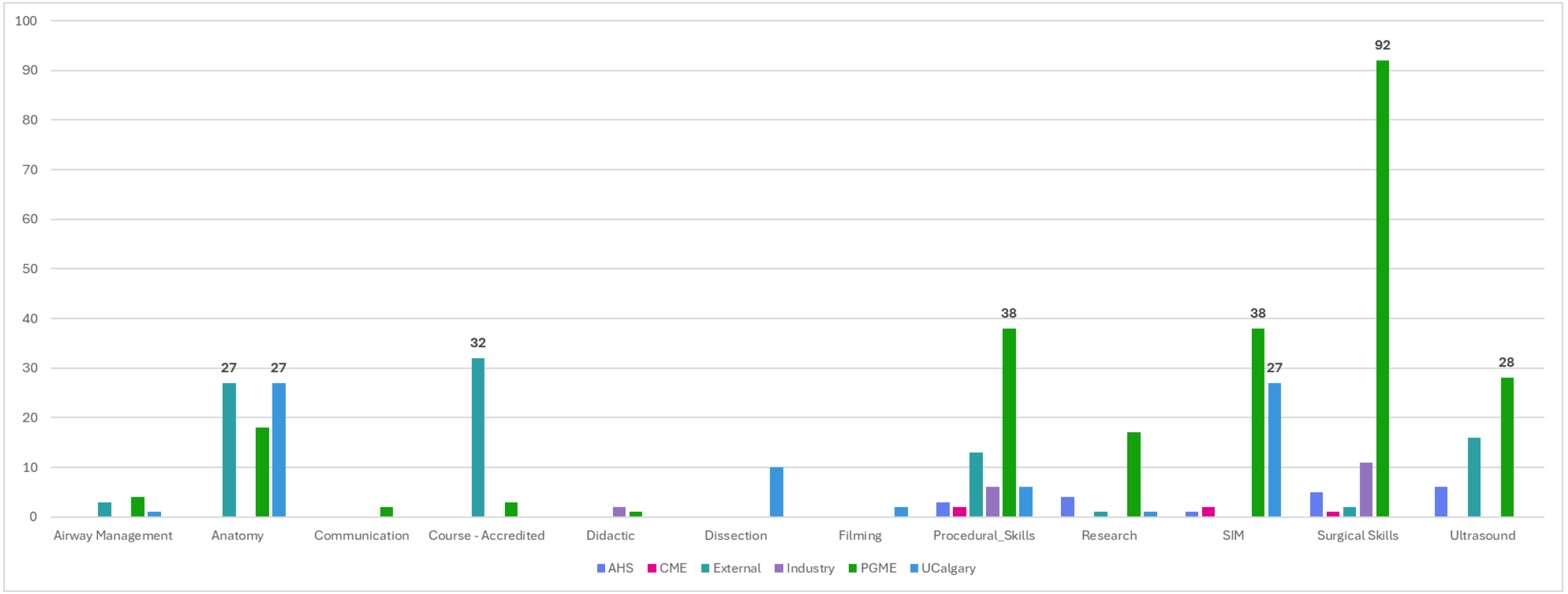
Session hours have risen steadily since 2020–21, showing a **125% recovery** from the pandemic low. Despite **CSL renovations and temporary SPL closure**, overall hours stayed strong at **2,711 in 2024–25**, just 7% below the 2023–24 peak. This stability underscores the team's ability to sustain high training volumes during major infrastructure transitions.

ATSSL Trend - Number of Learner Encounters by Lab (2018–2025)



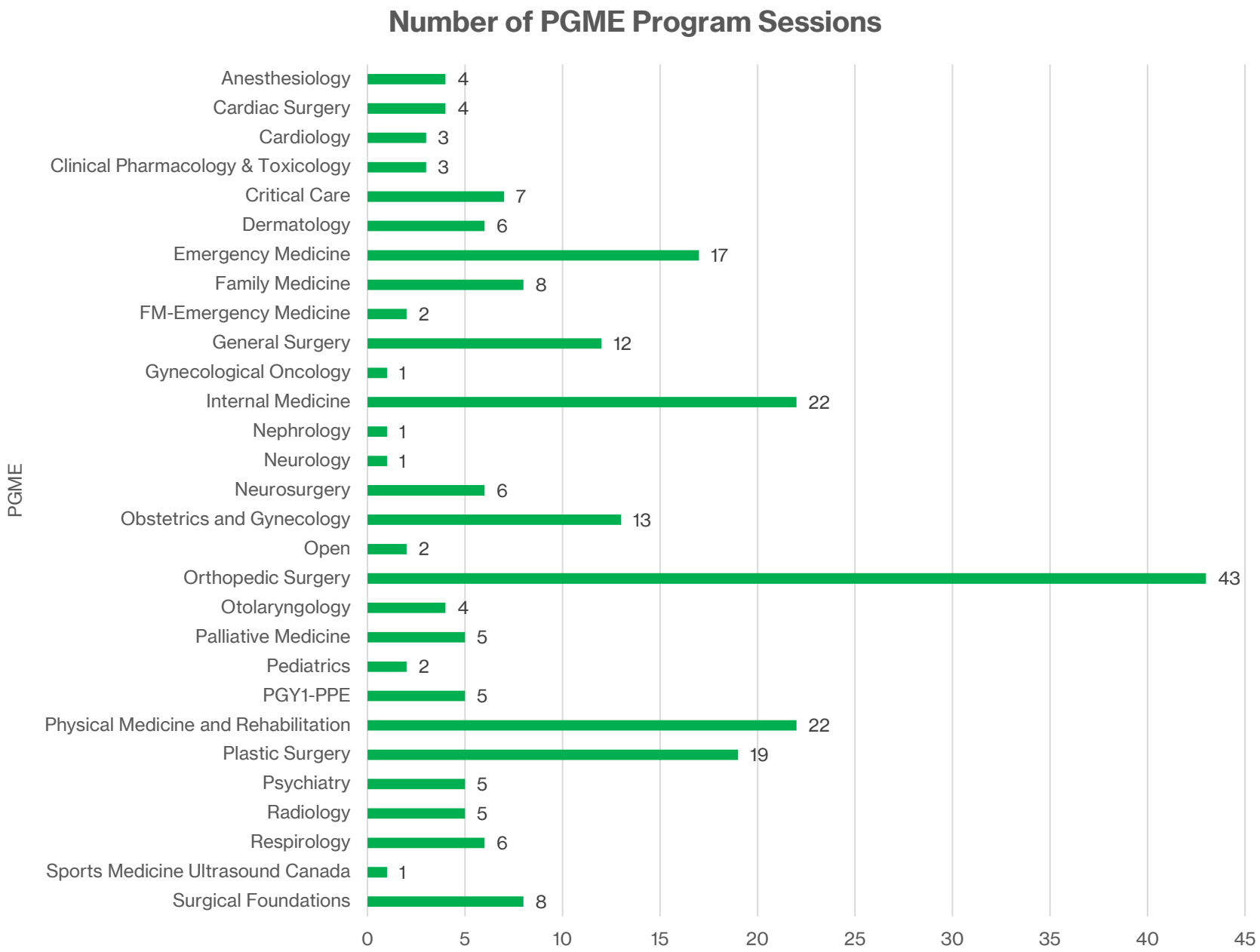
Learner encounters climbed from **5,152 in 2020–21** to **17,853 in 2024–25**, a **three-fold increase** reflecting ATSSL's growing role in medical education. CSL and SSL activities remain the primary drivers of growth, while SPL encounters decreased during the renovation year. Overall participation continues trending upward, highlighting sustained demand for experiential learning.

ACTIVITY BY DEPARTMENT



More than **350 of 650 total activities (54%)** at ATSSL served PGME, External, and Industry users, with the remainder supporting UME learners. PGME leads demand with 241 activities, particularly in surgical skills (92), procedural skills (38), and simulation (38). External groups (94) and Industry partners (19) also show strong engagement, especially in anatomy-based and technical training.

SESSIONS BY PGME PROGRAM



ATSSL supported **237 PGME activities** across a broad range of residency programs. Utilization was highest among **Orthopedic Surgery (43 sessions)**, **Internal Medicine and Physical Medicine & Rehabilitation (22 each)**, and **Plastic Surgery (19)**, highlighting the sustained reliance on simulation.

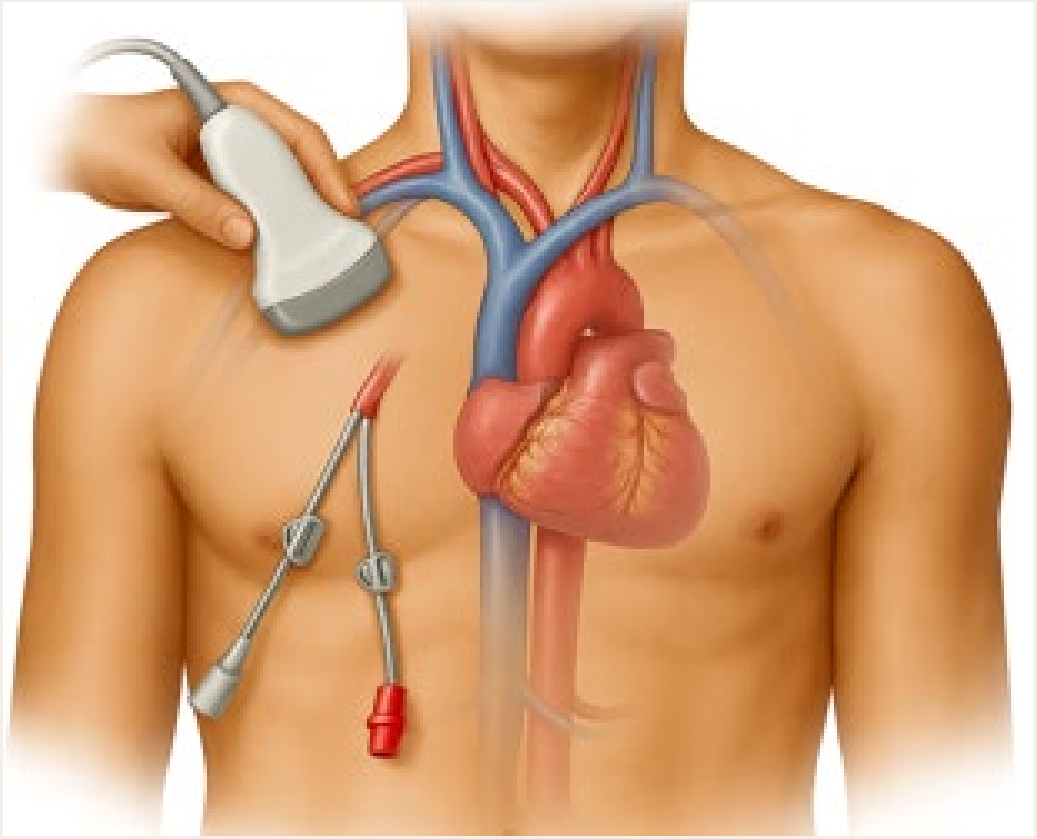
In addition, **Emergency Medicine (17)**, **Obstetrics and Gynecology (13)**, and **General Surgery (12)** also demonstrated strong engagement, reflecting diverse integration of simulation-based learning throughout PGME.

Body Donation Program & Innovation

The BDP prepared **66 donors** this year, most of whom (**~80%**) were cryopreserved to support growing demand for fresh-tissue surgical and procedural training. Hard-embalmed donors (**~18%**) continued to serve as essential resources for long-term anatomical study and prosections.

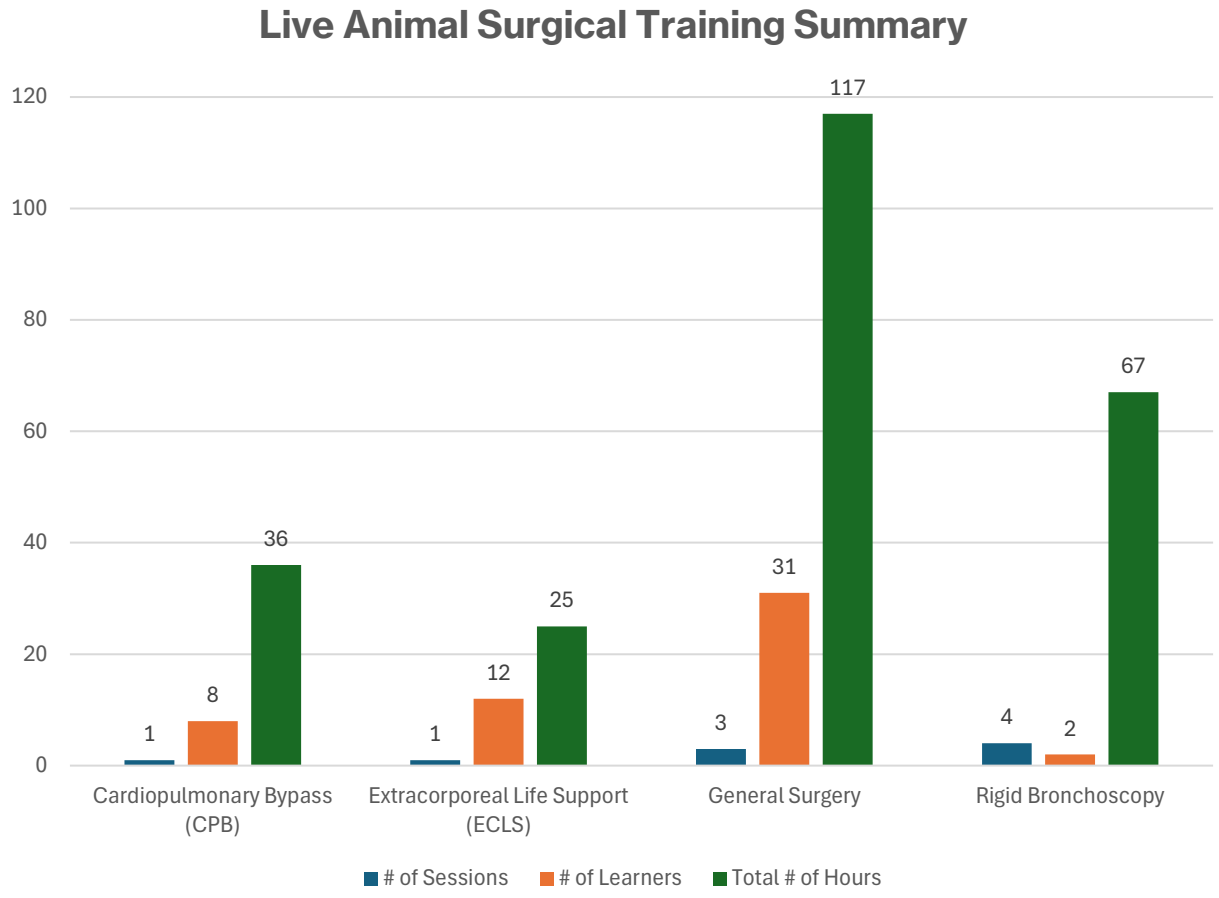
The BDP also supported the creation of a **pressurized vascular access model**, using donor vessels with a controlled perfusion system to provide highly realistic ultrasound-guided training.

In addition, the program provides **two hard-embalmed donors** to the **Department of Kinesiology** yearly, enabling anatomy education for over 500 **hundred undergraduate learners** and expanding access beyond CSM programs.



Ultrasound-Guided Vascular Access

LIVE ANIMAL SURGICAL LABORATORY (LASL)



In **2024–2025**, ATSSL's LASL supported **nine advanced surgical training sessions** for **53 learners**, totaling **245 combined instructional and setup hours**.

Training focused primarily on **General Surgery** and **Rigid Bronchoscopy**, which together accounted for more than 75% of total activity.

A total of **nine porcine models** were utilized to support these sessions, providing realistic, high-fidelity learning experiences for surgical residents and fellows.

Research

This year, our team supported **multiple research initiatives** across diverse programs, contributing **over 90 staff hours** to simulation-based studies; reflecting our commitment to **advancing clinical education and research through simulation**,

Key projects included:

- **Orthopedics**:
  - Proximal Femur Biomechanical and Fixation studies.
  - SimuSpine training and testing.
- **Women's Health**:
  - Pelvic floor injection research – AHS and PGME collaboration.
- **Technology & Innovation**:
  - 3DPIN Trial – hip guide development.
  - Ventilator Testing – performance and safety evaluation.
- **Pilot Studies**: Hidden identity simulation: Using secret character roles to practice navigating event medical team dynamics.

ATSSL Cadaveric Perfusion Model for Ultrasound-Guided Vascular Access:
ATSSL received ethics approval in January 2024. The model was implemented in a vascular access course by January 2025 and is now an established simulation resource. Ten additional sessions have been requested for the upcoming fiscal year by PGME.

Featured Publications

"*Personal Protection Equipment: Preliminary Evidence of Effectiveness from a Three-Phase Simulation Program"*
This study provides early evidence on PPE effectiveness through simulation-based research, contributing to improved safety protocols in clinical settings.

"*Hidden identity simulation: Using secret character roles to practice navigating event medical team dynamics."*
A gamified simulation offering an engaging, low-stakes method to introduce emotionally charged topics like team conflict.

CONCLUSION

The 2024–2025 year highlights the ATSSL's continued evolution as a provincial leader in simulation-based medical education, anatomy training, and applied research. Despite major renovations and space constraints, utilization across UME, PGME, and external partners remained strong, and new programs – such as the Master of Physician Assistant Studies – expanded our educational reach.

Through the generosity of anatomical donors, the Body Donation Program enabled diverse teaching modalities and supported new innovations, including the development of a pressurized vascular access model that is already enhancing hands-on vascular training across multiple disciplines.

As we look ahead, our focus remains clear: advancing high-quality education, strengthening clinical readiness, and improving patient safety through collaborative, immersive, and evidence-informed simulation experiences. Together, we continue to build the future of health care training – one learner, one session, and one innovation at a time.

Contact Information

ATSSL Location:

University of Calgary, Foothills Campus, Calgary, Alberta, Canada.

Mailing Address:
Health Research Innovation Centre
Room BA01, 3330 Hospital Drive NW
Calgary, Alberta, Canada, T2N 4N1
Phone: *403-220-5271*
Fax: *403-210-9836*

BOOKING REQUEST OVERVIEW

Contact Details:

- ATSSL Website: cumming.ucalgary.ca/atssl
- General Email: general.atssl@ucalgary.ca
- Clinical Skills Lab: clinicalskills.atssl@ucalgary.ca
- Surgical Skills Lab: surgicalskills.atssl@ucalgary.ca
- Special Procedures Lab: specprocedures.atssl@ucalgary.ca
- ATSSL Body Donation Program: anatomy@ucalgary.ca
- Research Request/ Inquiry: research.atssl@ucalgary.ca

Thank You

With gratitude to our staff, faculty, learners and partners for their continued support and collaboration.

Together, we advance medical education, strengthen clinical excellence, and enhance patient safety — one simulation at a time.