

## Objective

Staffing shortage is among the most critical challenges consistently faced by clinical laboratories. With the realization that there is no current standardized approach to monitor staffing concerns and determine future needs; we created a data driven model for an objective and systematic evaluation of laboratory productivity and staff utilization rate using existing key performance indicators.

**Table 1. Testing workflows and key testing areas and routine tasks identified for evaluating productivity.**

Workflow	Testing Areas/Tasks
Deceased Donor Workup	ABO
	HLA Typing
	Infectious Disease Testing
	Crossmatch Cell Isolation
	Flow Cytometric Crossmatch
Tissue Donor Workup	Infectious Disease Testing
	Infectious Disease Testing (manual)
	HLA Typing
Recipient/Living Donor Workup	Infectious Disease Testing
	Crossmatch Cell Isolation
	Flow Cytometric Crossmatch
	HLA Antibody Screening
	Proficiency Testing
Routine Tasks	Competency Assessments
	Monthly Serum Processing
	Transplant Center Packets
	Donor-Specific Antibody Reports
	Meetings

**6 consecutive months between 0.85-0.90 requires immediate evaluation and action**

**Listen to your staff, to understand the correlation between workload and burnout to identify a healthy productivity index**

## Results

A retrospective analysis was conducted over a 15-month period between Jan-2024 and Mar-2025 (Figure 2). Our results indicated that over this period, the productivity index of our technical staff was regularly over 0.80, meaning 80% of their time was devoted to testing, with 30% of the period over 0.95. The laboratory “overwork” was likely worse than what the data indicated because the model did not account for the tasks associated with laboratory maintenance and improvement.

**Figure 1. Equation Index**

**Productivity Index**  

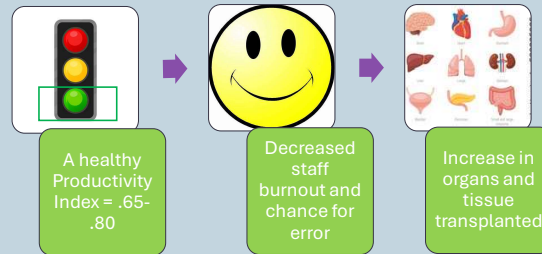
$$= \text{Total Workload Hours} \div \text{Total Staff Hours}$$

$$\text{Total Workload Hours} = \sum(WV_1 \times TAT_2) \text{ for each test area/task}$$
  

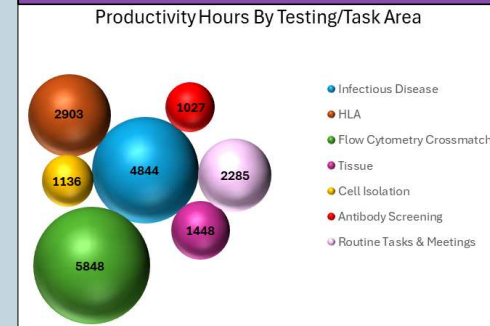
$$\text{Total Staff Hours} = (A_3 - pt_4 - h_5) \times S_6$$

- <sup>1</sup> workload volume/test number per test area/task
- <sup>2</sup> average turnaround time by testing area/task
- <sup>3</sup> annual staffed hours per technologist
- <sup>4</sup> paid time off
- <sup>5</sup> paid holidays
- <sup>6</sup> number of technologists

## Proposed Working Productivity Index



**Figure 2. Bubble Graph showing workload by each testing discipline**



## Conclusions

This comprehensive productivity analysis highlighted critical staffing gaps that were obscured by traditional budgeting methods. By integrating test volumes, TAT, and staff availability, a more accurate and adaptable model for evaluating staff needs was developed. Implementing continuous, data-driven staffing strategies is essential for maintaining operational excellence, supporting employee well-being, and ensuring high-quality patient care in the clinical laboratory setting.

