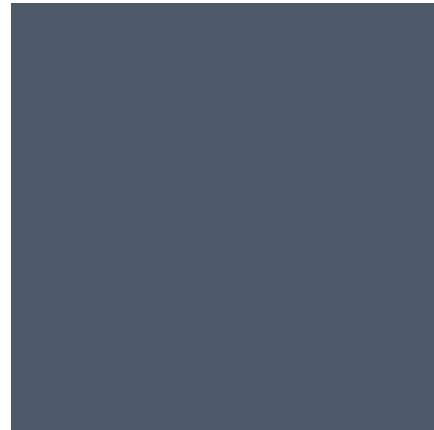


Early Lean Adopters: Lessons Learned From Leading Labs in Past 10 Years

Lab Quality Confab
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“Specializing in
Lean
Implementation
to get Better
Results for
Hospital
Laboratories.”

**Certified in Lean
Management by the
University of Michigan,
College of Engineering,
since 2004.**



100%
woman
owned



Founded in 2002.



CERTIFIED
MANAGEMENT CONSULTANT



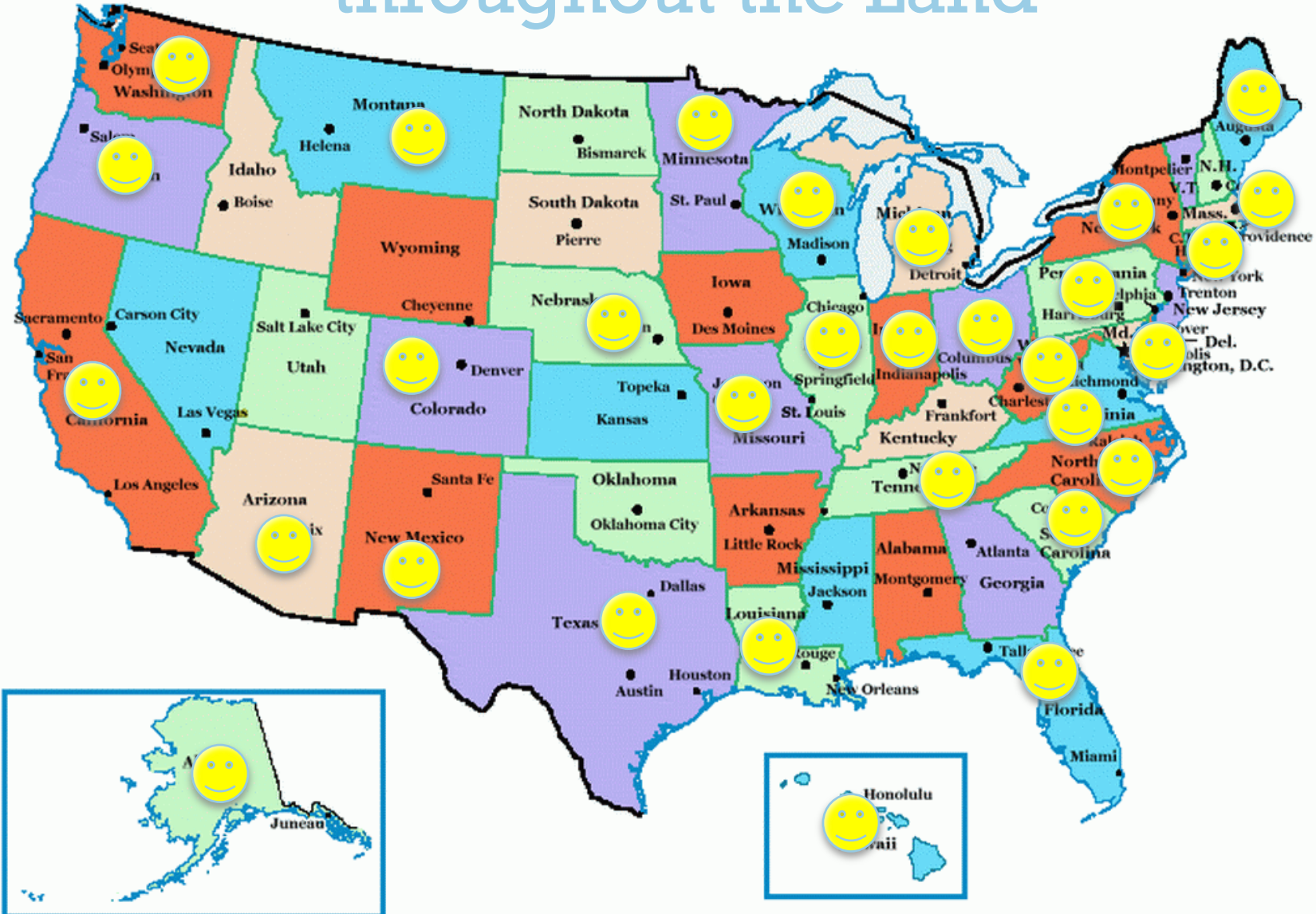
“Who are our Clients?”

Physician Office Labs
Hospital Laboratories
Reference Laboratories
Specialized Genetic Labs





Spreading Happiness to Labs throughout the Land





Sample of My Work:

Lean Facility Design at
Caris Life Sciences in Irving, Texas

+ Today's Discussion

The purpose of my presentation is to ***share learnings*** of three early Lean adopters.

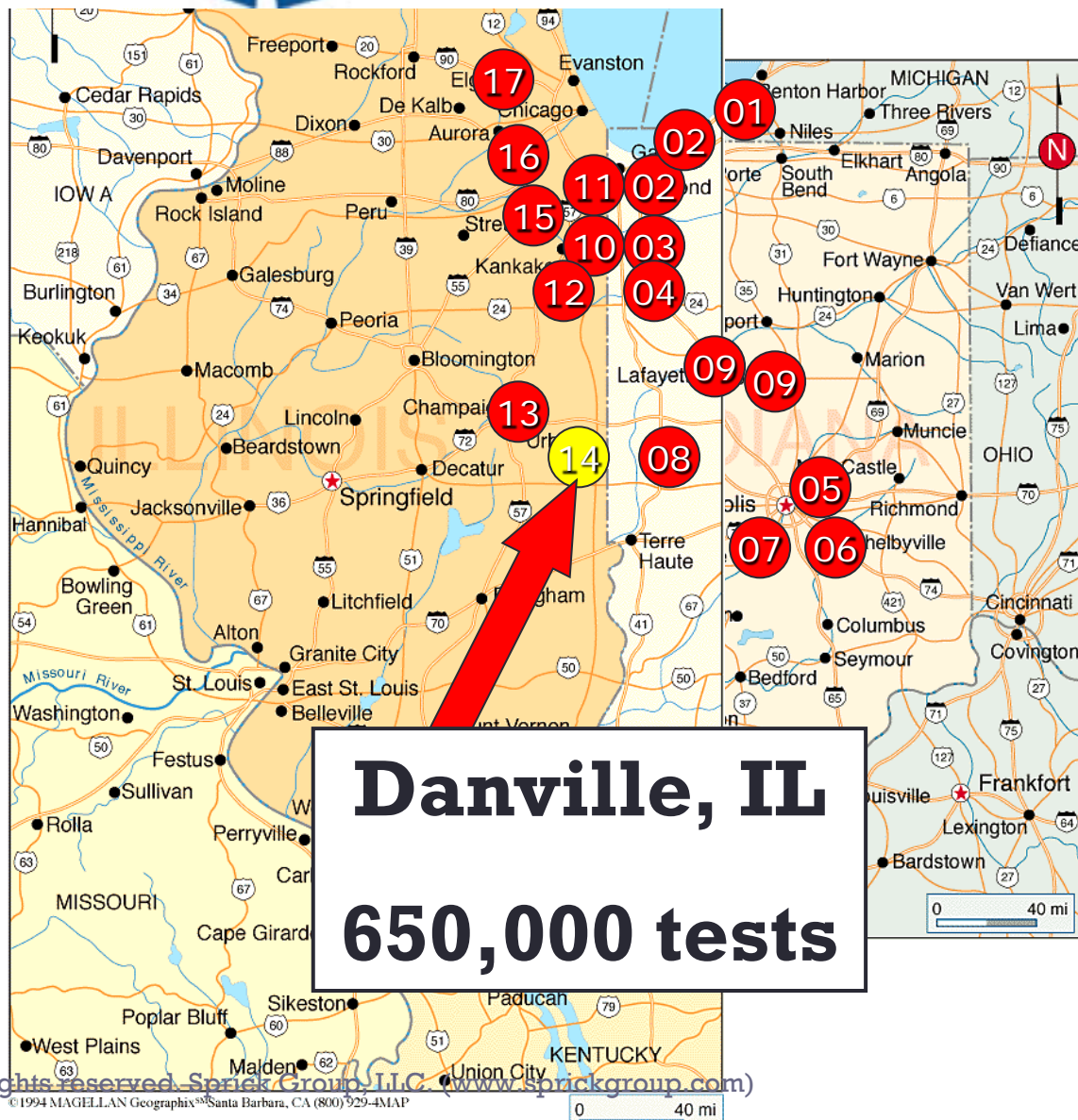
Let's look back at these labs to explore ***why*** they choose Lean and ***where*** they are in their journey ten years later.

+ Early Lean Adopter #1: PCL Alverno

- December, 2004: Systems merge their **18** laboratories
- Free-standing central lab located in Hammond, IN
- All hospital labs convert to Acute Care Services Labs
- New organization selects Lean as the toolkit **to optimize their operations**, starting with hospital laboratories
- March, 2005: United Samaritan Medical Center in Danville, Illinois (**the smallest hospital**) - first site



(in
2004)





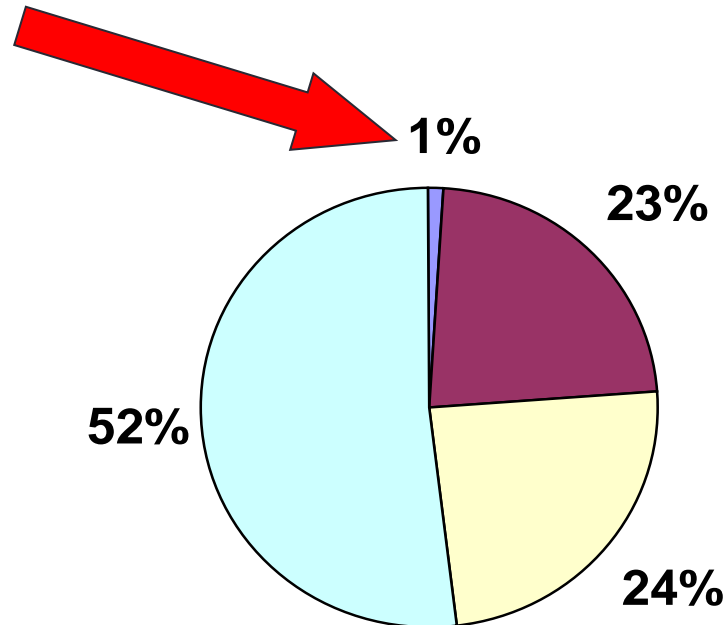
PCL Alverno's Kaizen Events

1. Phlebotomy Kaizens to **reduce lead time** for stat draws and **level workload** for AM collections
2. Improve **turn around time** for early morning work on hospital inpatients
3. Develop **Lean work cells** appropriate for their acute care services laboratory model, that can be replicated at other acute care sites

+

Draw stats within 15 minutes – 75% compliance

Stat Completion - Baseline: April, 2005



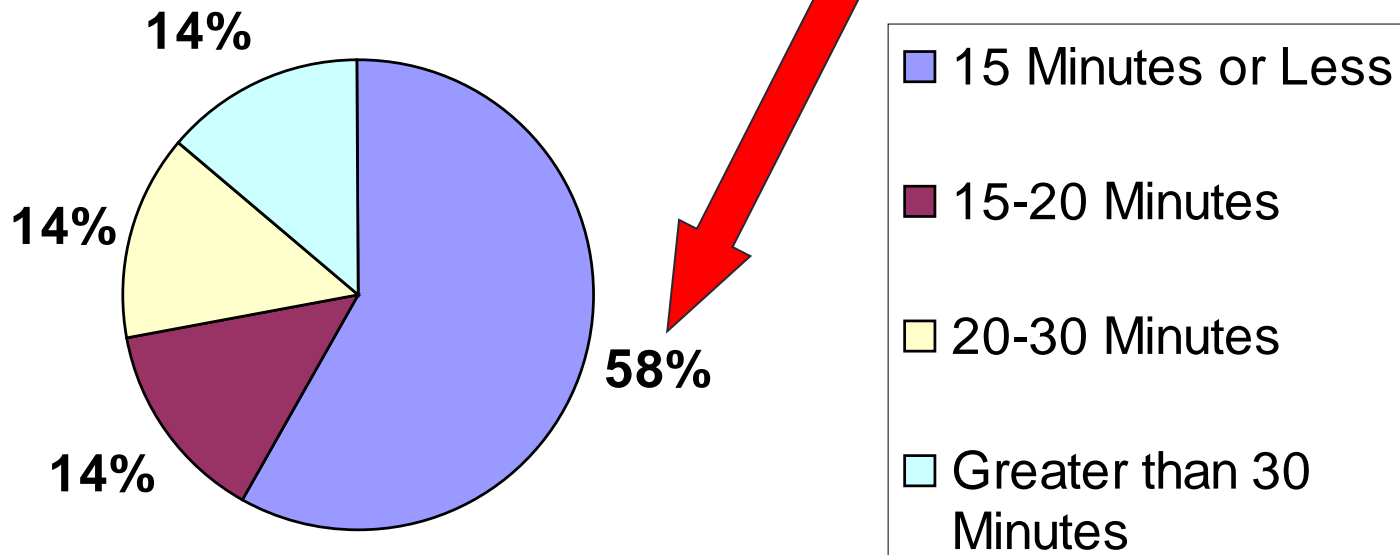
**1st
Event**

+

Draw stats within 15 minutes – 75% compliance

Stat Phlebotomy Response Rate - June 7

**1st
Event**

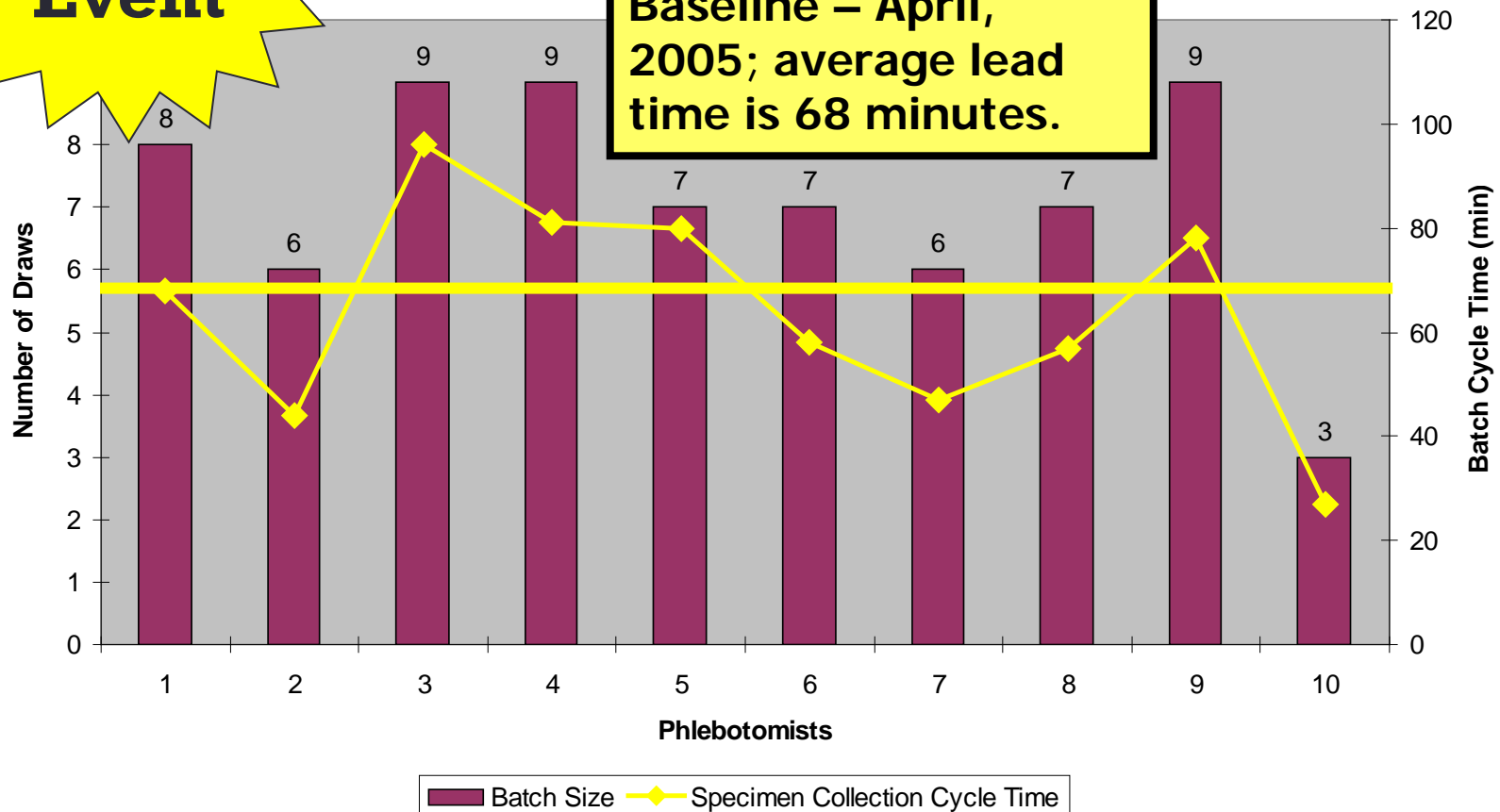


+ AM Draws must be done by 5:30 AM

**2nd
Event**

The Effect of Batch Size on Cycle Time

Baseline – April, 2005; average lead time is 68 minutes.

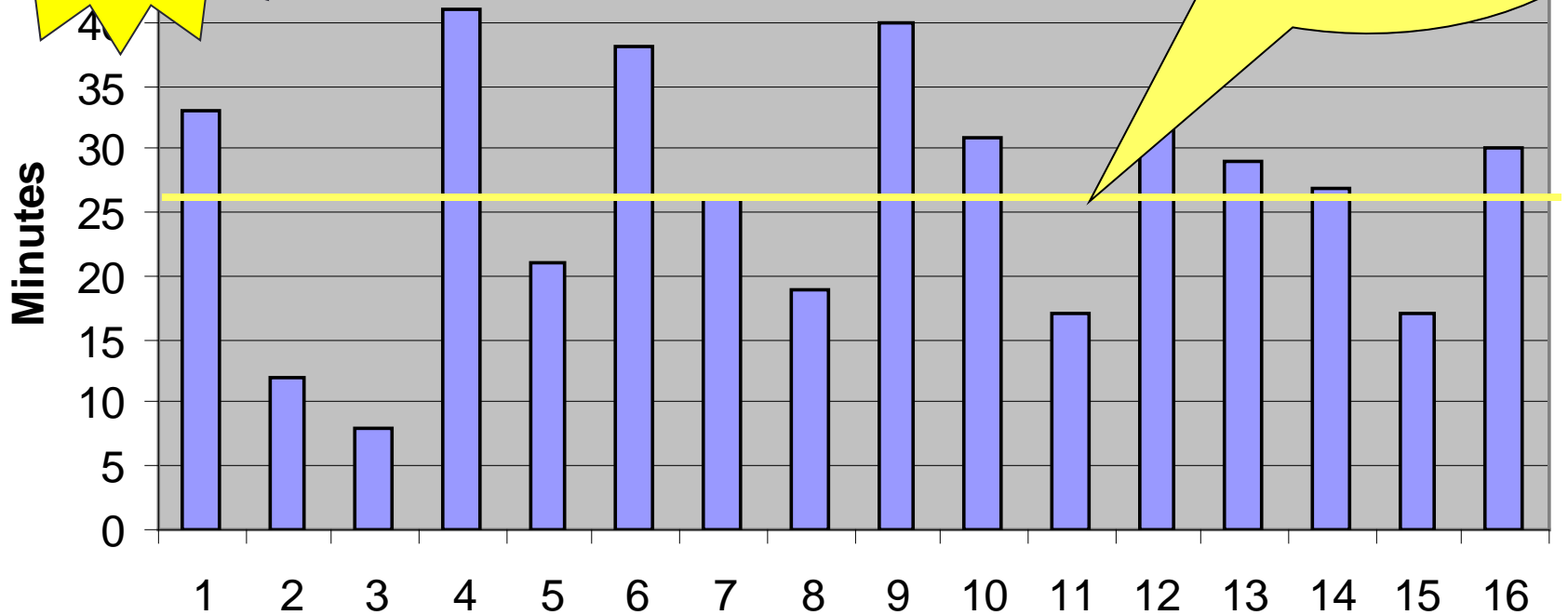




Three or Thirty Rule Implemented

**2nd
Event**

Leak Botomy Cycle Time





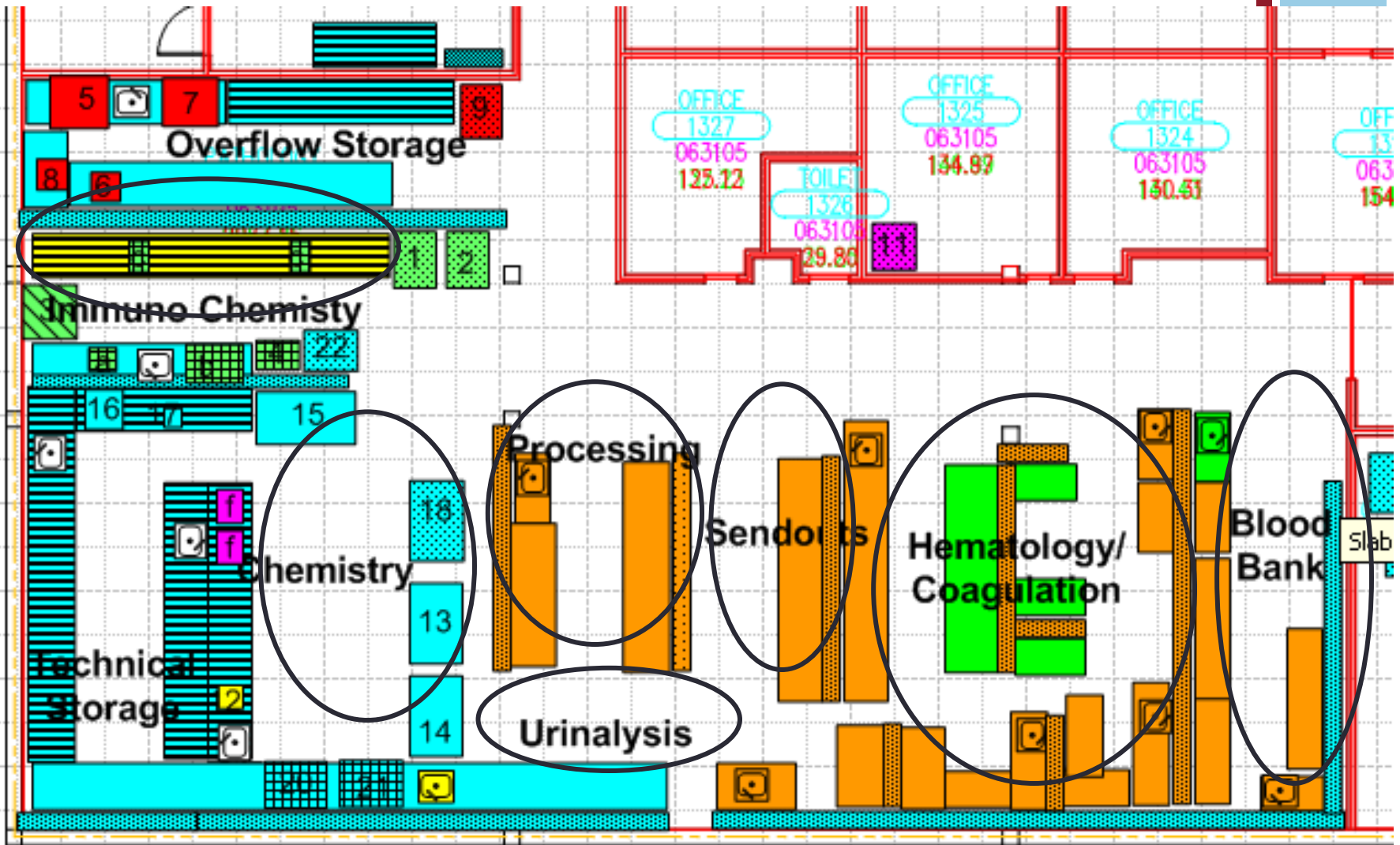
Cellular Design Kaizen Team's Goals



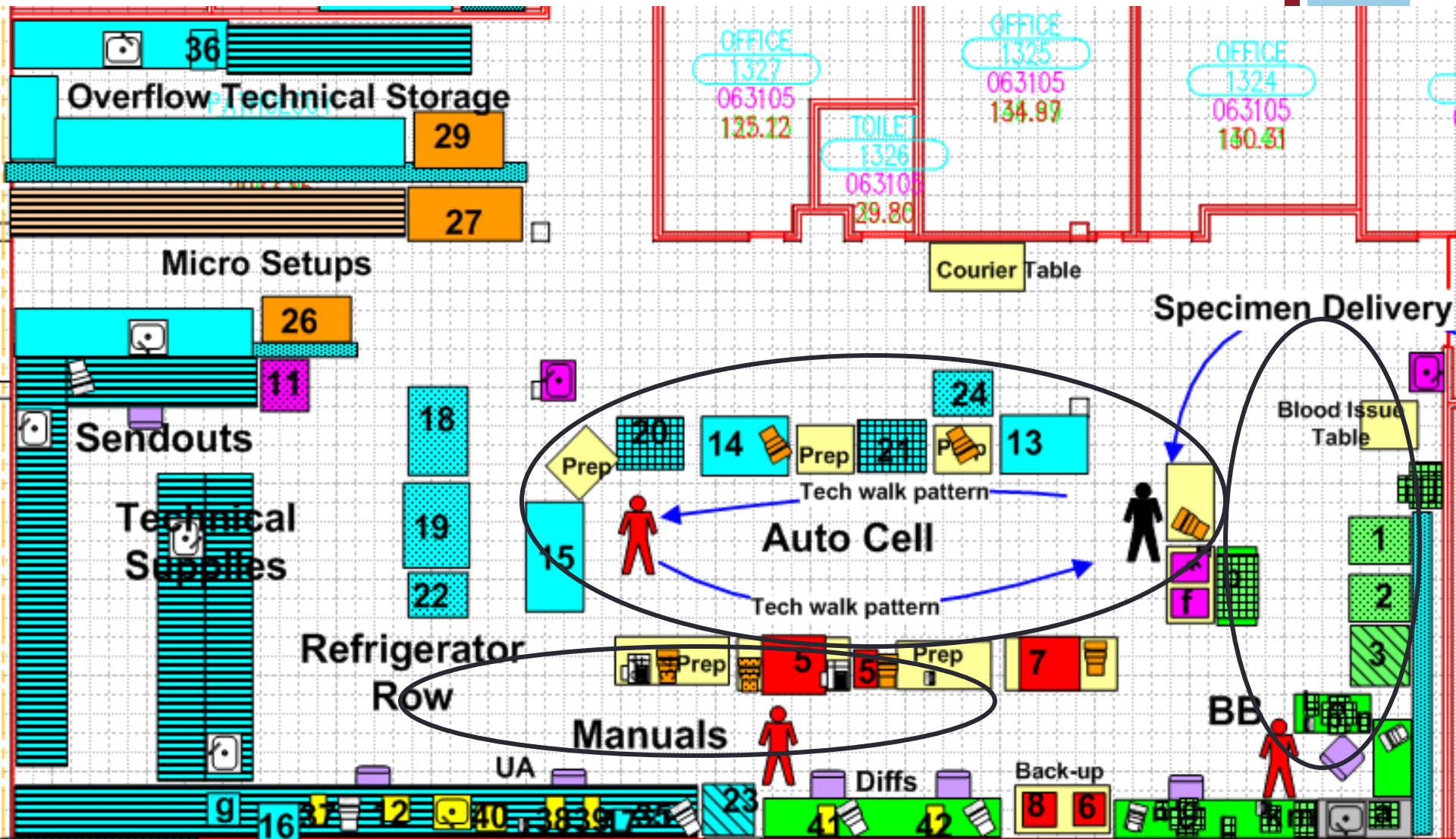
**3rd
Event**

1. ***Reduce wasted human motion*** and stress by following logical work processes
2. ***Eliminate silos*** to improve communication and teamwork
3. ***Improve staffing*** by coupling processes- especially for PM' s and nights
4. ***Reduce time*** specimens sit in storage waiting to be handled (waste)

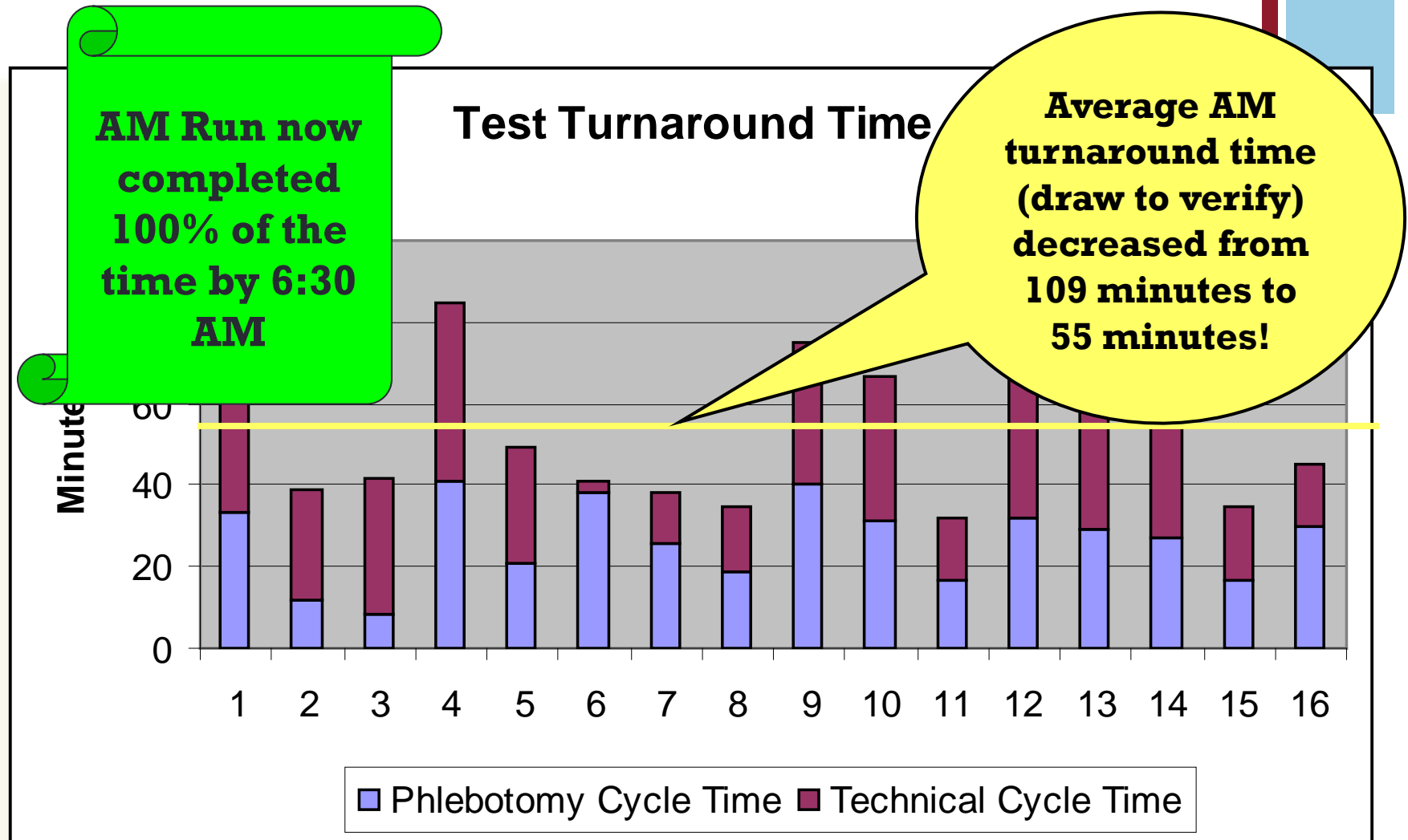
+ Before: Original Lab Was Designed in Multiple Silos



+ After: Three New Lean Work Cells



+ Lab Value Stream After Kaizen



+ PCL Alverno's CEO & President 10 Years Later

“We are more focused than ever especially with Kaizens and we ***set goals for all the sites*** to demonstrate that they are utilizing the tools. We ***run several hundred per year*** and only expect that to continue. It is supporting ***our drive to ISO certification*** for the central lab operation.”

-- Sam C. Terese, CEO and
President, PCL Alverno

+ Early Lean Adopter #2:

Geisinger Medical Laboratories

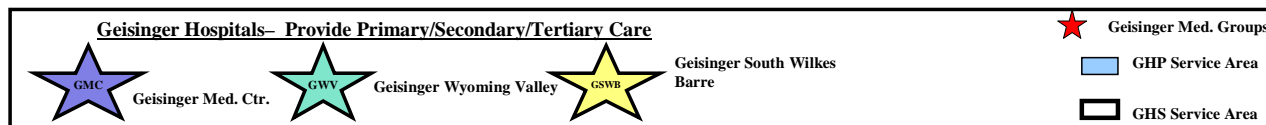
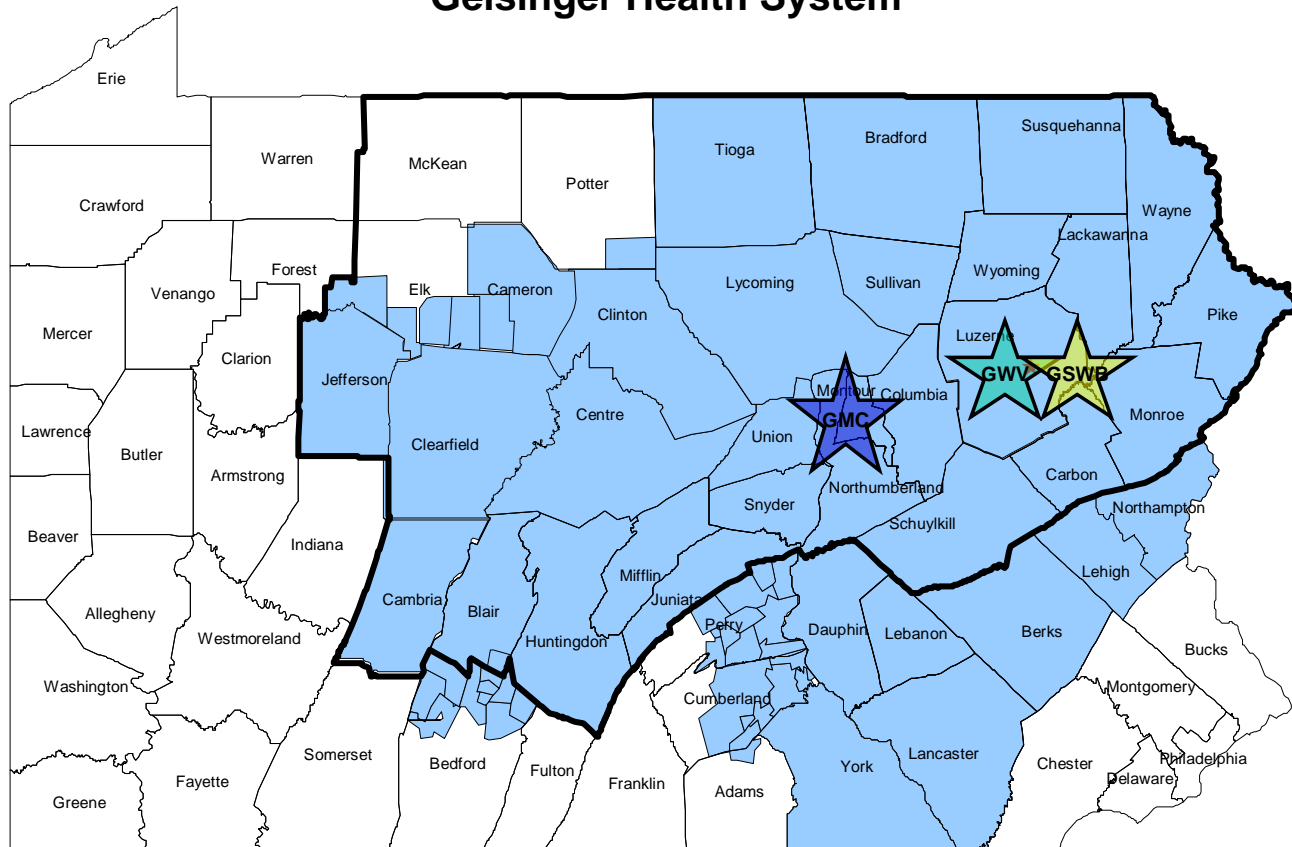
- 28 Geisinger regional labs, 9 rapid response labs, 3 patient service centers, and 3 medical centers and associated hospitals.
- Based on 2008 data:
 - Surgical cases = 63,000
 - Number of blocks = 168,000
 - IHC stains = 53,000
 - Special stains = 13,000



Geisinger Health System

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Geisinger Health System



+ Why They Looked to Lean

- ***Significant growth*** in their pathology practice with new market opportunities
- ***Dissatisfied*** pathologists
 - Inconsistent slide delivery to Northeast hospitals
 - Poor turn-around-time for IHC and special stains
 - Need for earlier delivery of routine H & E slides
- ***Not prepared*** for new growth

+ Geisinger's Preparation List

- Completed LEAN fundamental instruction
- Completed **LEAN boot camp**
- Conducted rapid lab assessment
- Created **spaghetti diagrams**
- Created **value stream map** for various processes of following a specimen
- Identified opportunities for **Kaizen events**
- Developed near future and **future state goals**



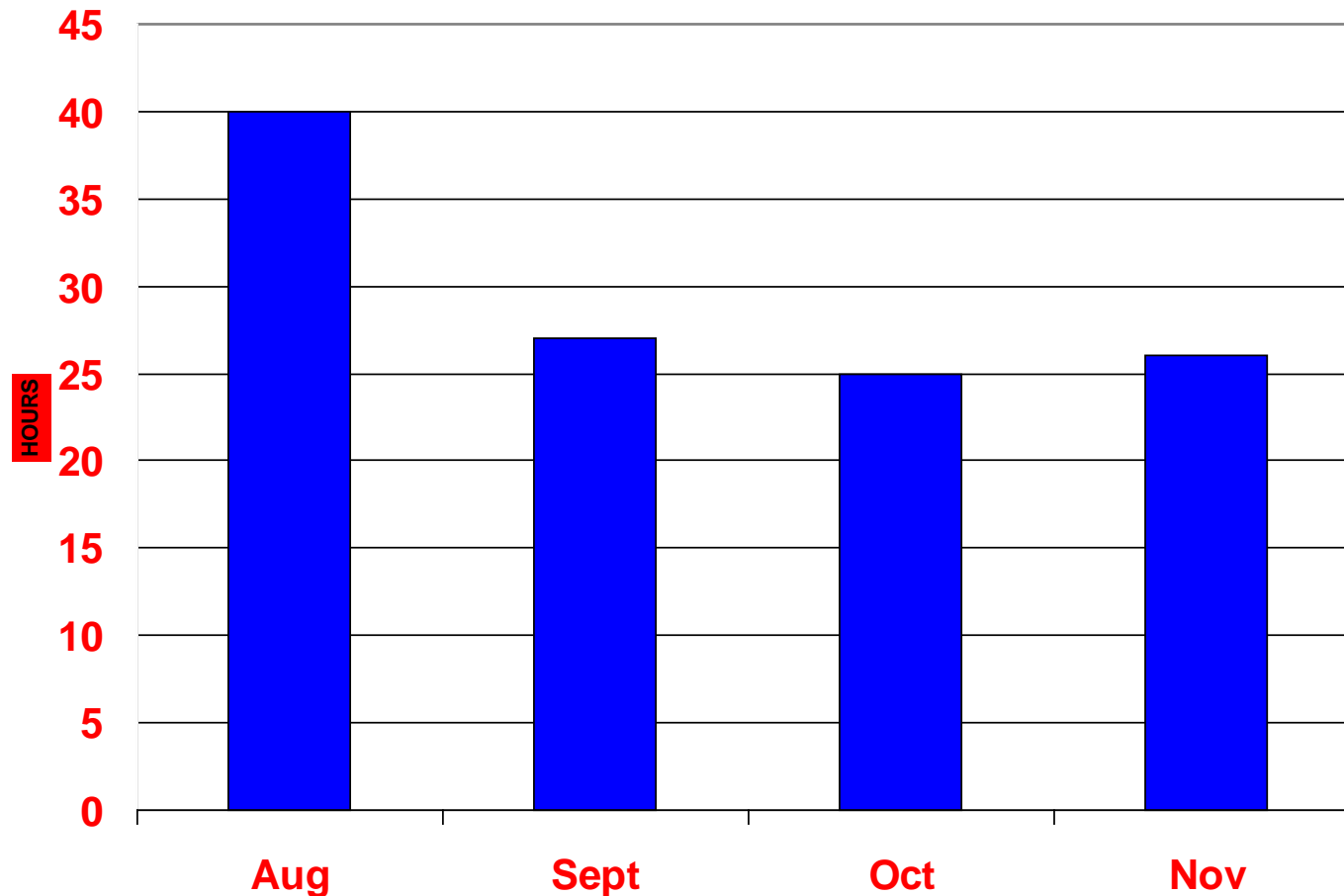
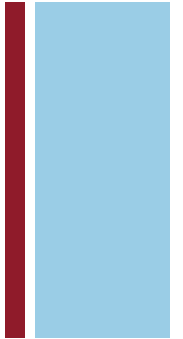


Geisinger's Kaizen Events

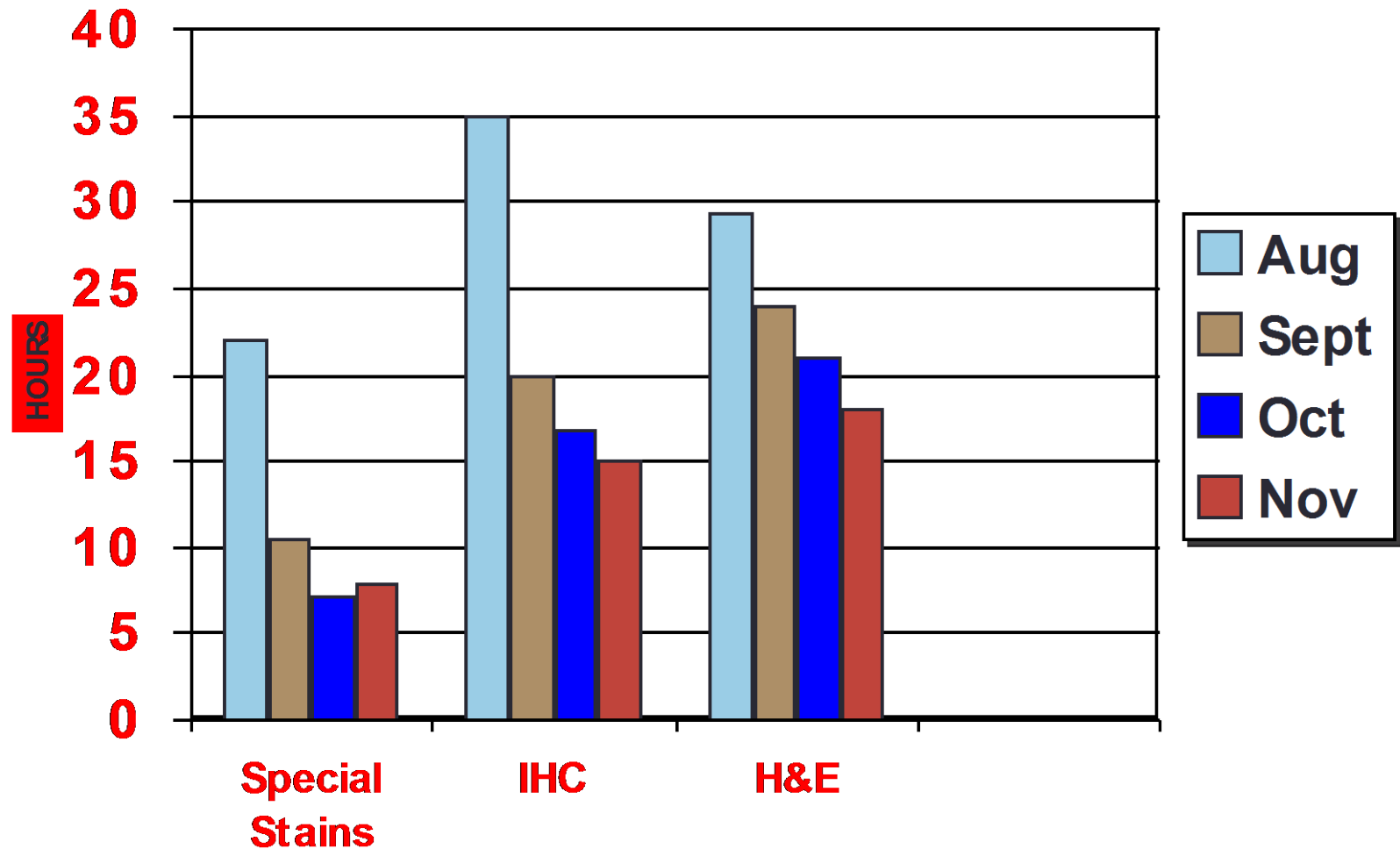
1. **5S** Histo, Surg Path, and Transcription
2. **Standardized work** for Accessioning, Histology, Transcription and Pathology
3. **Redesign** the Histology workspace
4. **Level the workload** in Histology
5. **Transport smaller batches** to support one piece flow
6. Move Surg Path lab closer to Histology



Geisinger H & E Turn Around Time Reduced by 14 hours

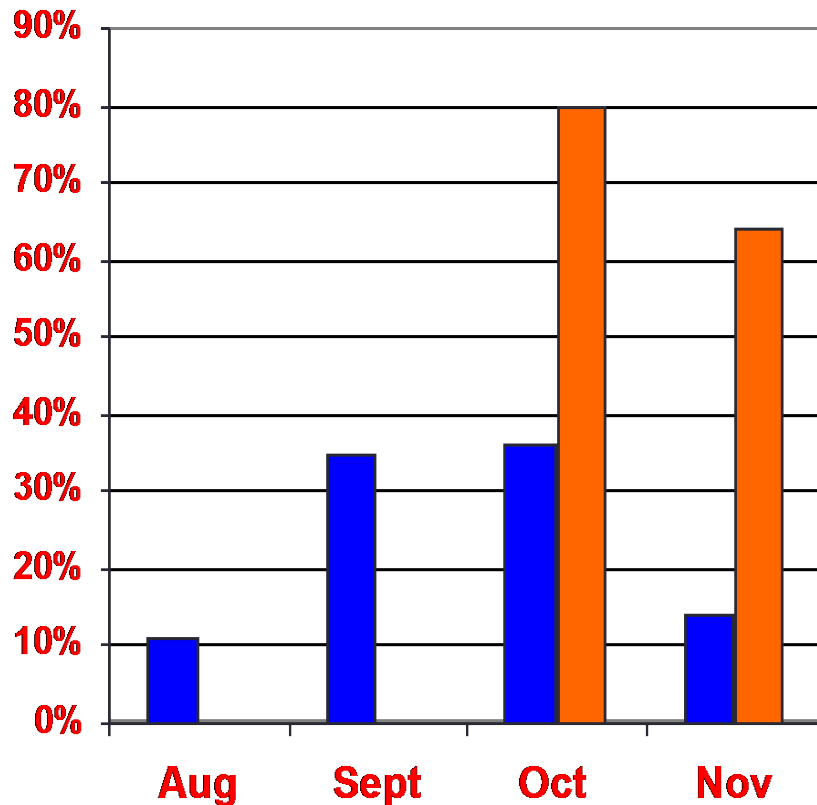


+ Geisinger Before and After: Stain Turn Around Times

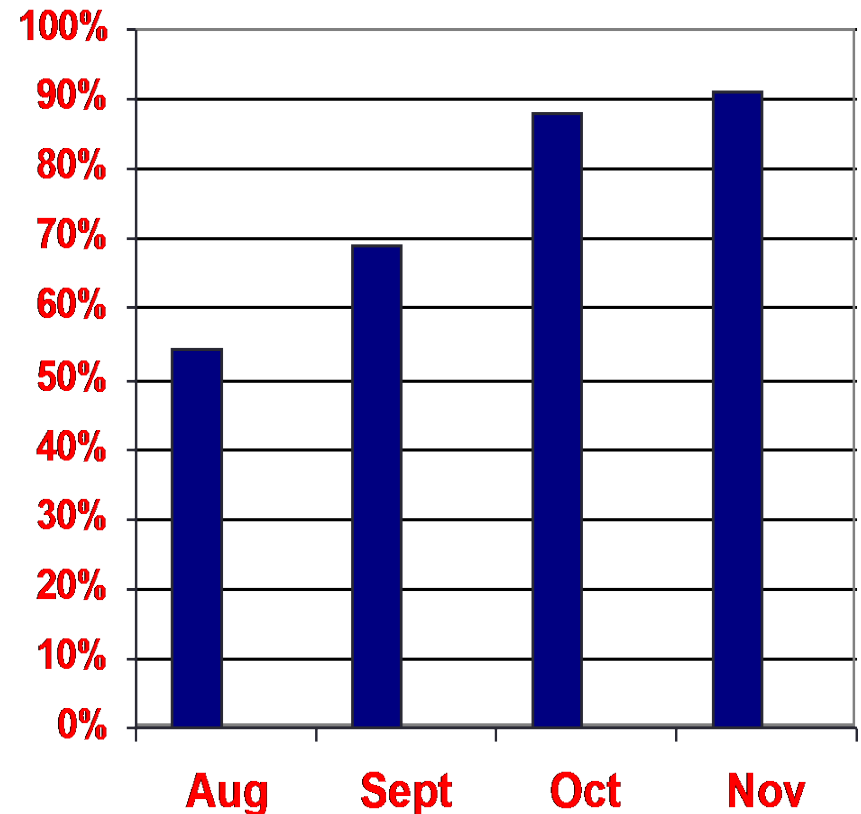


+ Geisinger Before and After: IHC Service Commitment

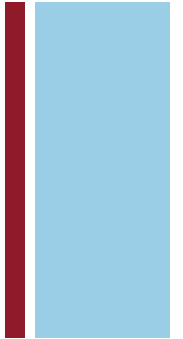
■ Ordered by 10; Out by 3 pm
■ Ordered by 10:30; Out by 4:30 pm



Ordered after 10:30 ; Out by
7am next day



+ Geisinger's Director of AP Operations Comments



- We will never “go back”
- Lean is continuous process improvement
- We will never be “done”
- We will always be planning for our next “trip”

--Sandy Mullay, Operations
Director, Anatomic Pathology

+ Geisinger Medical Laboratories Six Years Later

- Starting in early 2013, a 115 thousand-square-foot building will replace the hospital's current medical testing labs
- Expected to be completed by April of 2015
- Will stand 5 stories tall and house 370 full-time employees
- ***Designed using Lean principles***

Source: www.geisinger.org

+ Geisinger Medical Laboratories Six Years Later, con't.

- One of the design goals is to ***construct a leading-edge clinical laboratory that blends innovative technologies with LEAN*** principles: best practices that increase speed, efficiency and quality in the lab setting.

Source: www.geisinger.org

+ Early Lean Adopter #3: Carolinas HealthCare System

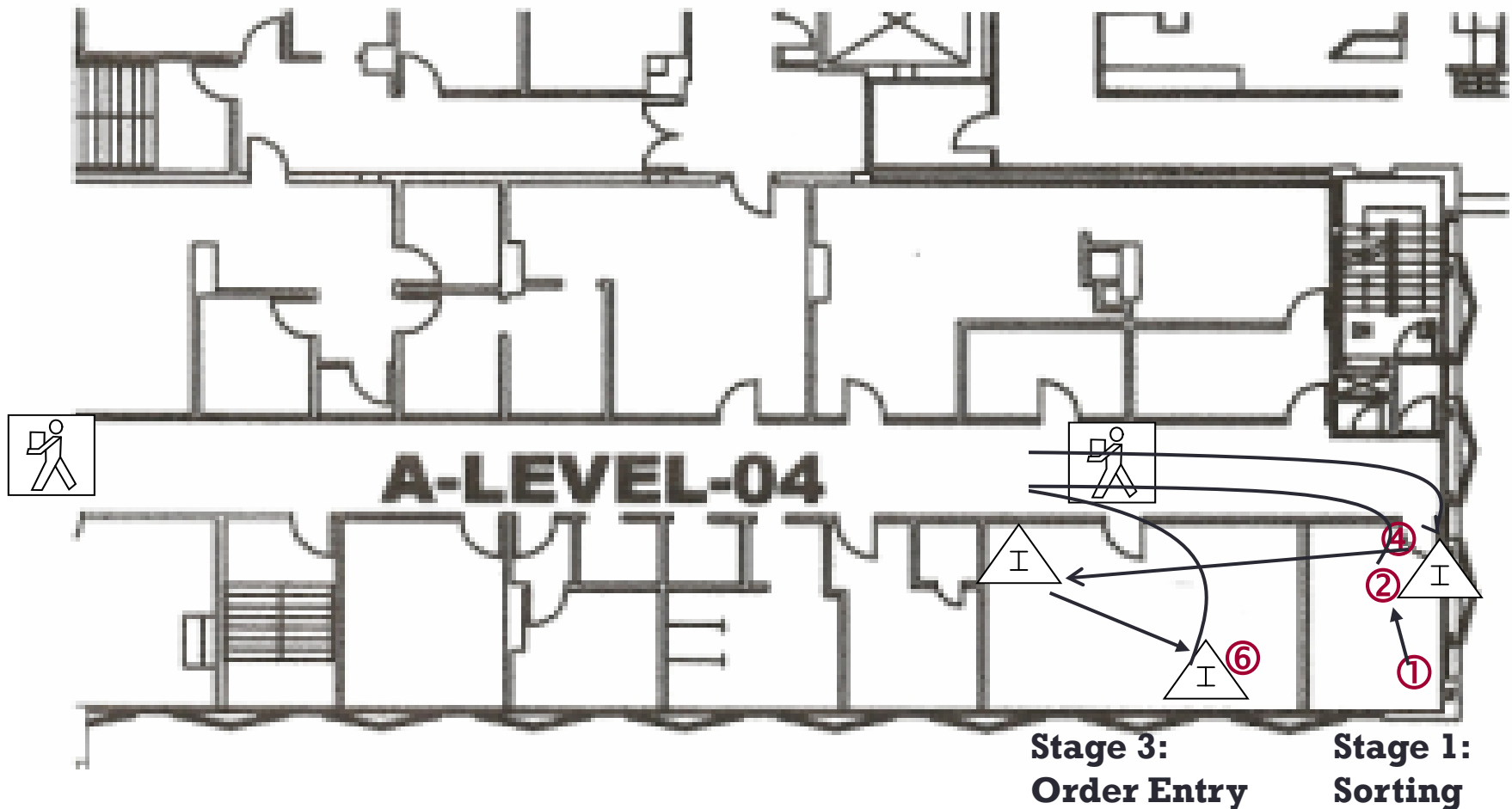
- CHS is the largest health care system in the Southeast and the second largest public, multi-hospital system in the nation
- Headquartered in Charlotte, NC
- Outreach Volume in 2007:
 - 2200 reqs/day
 - 528 Client
 - 1.8 M tests

+ Kaizen Event (Two Weeks)

- Assess, analyze and ***implement streamlined processes*** for the outreach specimen receiving and registration area.
- Symptoms included ***poor quality, overtime, low productivity.***
- Desired outcome:
“Determine optimal layout and work cell configuration, options to standardize work and balance staff workload such that ***workflow is significantly improved.***”

+ Current State Assessment: Tube Travel Diagram

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Feedback from First Employee

11/8/07 20:28

Thoughts on the New Process

- ① Saves time in doing the following:
 - (A) Sorting
 - (B) Delivery of spec
 - (C) Problem Regs.
 - (D) No distractions
 - (E) Do not get side tracked from other areas on issues, problems or delivery.
 - (F) If there were registration problems with the Reg. you were working on, it could be corrected immediately without leaving your desk.

- ② ~~Specs.~~ Specs. are processed more timely.
 Since the ~~1st~~ 1st Regs in are processed as they arrive and then delivered soon after they are ordered.
~~Time is saved by~~
~~a spec~~



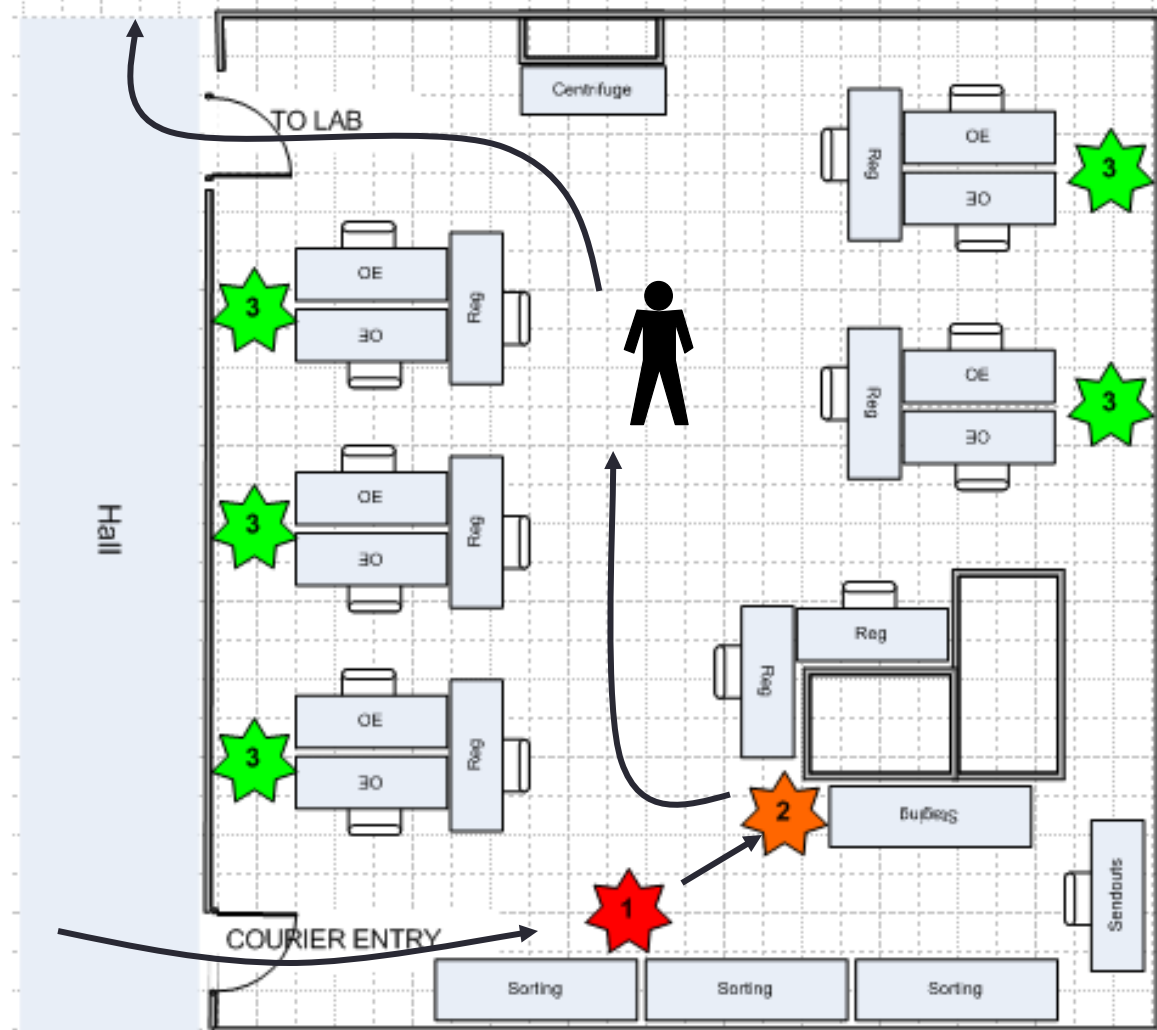
Before & After Measurements

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Lean Indicators	Before	After	Change	Goal (90 days)
Lead Time Reduced	4:02 hr	1:38 hr	40% decrease	1:30 hr
Reduction in Wait Times	183 min	39 min	72% decrease	60 min
Worker Steps Reduced	366	237	35% decrease	150
Non-value Added Work Reduced as a % of Total Work	75%	39%	48% decrease	20%
Overtime Reduced	9.98%			< 4.4%
Worker Productivity	10.7 accn/hr			12
Leave Time	3:56 AM	12:45 AM	3:15 hr improvement	12:00 AM

+ Outreach Registration Area Seven Years Later

Six work cells support additional growth in outreach.



+ CHS Laboratories Seven Years Later

- \$17 million investments in laboratory facilities approved in 2013
 - ***Adding a 28,000-square-foot core*** reference laboratory to handle outreach and esoteric testing.
 - ***Renovating main*** acute care hospital laboratory
- ***Used Lean principles*** to design facility.
- Operational by October, 2015

Source: Charlotte Business Journal, January 30, 2013

+ CHS' Vice President on “Why Use Lean?”

“A Kaizen event offered a **“quick hit” process change** that we felt would positively impact our overall turn around times, how early our outreach processing finished each night, our overtime utilization, and improve employee satisfaction

We always knew we had waste in our process but we felt **lost in understanding how to tackle** and eliminate the waste.”

-- Thomas Hassett, VP (retired)

+ CHS' Vice President on “Why Use Lean?”, con't.

“The timing was perfect for our institution as we prepared to invest capital into space for the department. Lean could offer ***a chance to evaluate and maximize workflow so that we could design*** the space to fit our new processes

We realized we could no longer work harder and achieve our goals . We had to ***figure out how to work smarter*** if we were going to continue to have success in our outreach program.”

-- Thomas Hassett, VP (retired)



Wrapping Up

Key Lessons from Early Adopters



Three Key Lessons

PCL Alverno's CEO & President

1. Lessons for why is waste so important - not about cost really; ***waste leads to poor quality***
2. ***Measure, measure, measure*** and measure some more
3. Embed Lean in your goals but more importantly ***embed Lean in your culture.***



Three Key Lessons Geisinger's Operations Director

■ ***Be prepared***

- There will be belly-aching
- Not everyone will be able to accept the changes

■ ***Respond***

- There will be whining and many, many questions
- Keep Communications Open

■ ***Clean-Up***

- You may have to pull over but remember to move on
- Avoid silos – encourage team behavior

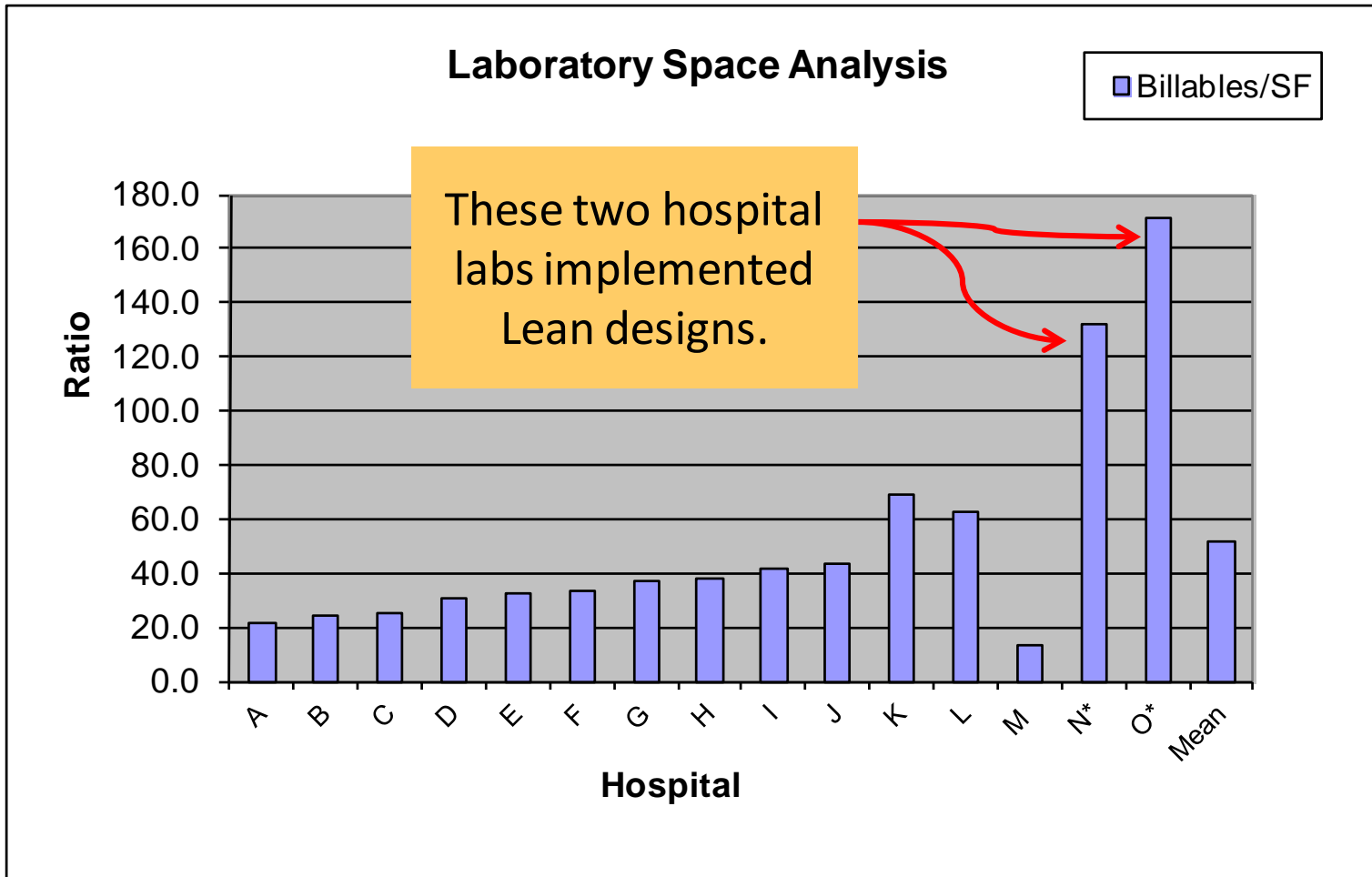
+ Three Key Lessons CHS' Vice President

1. Improvements should be ***continually made***
2. Monitor to do lists and ***complete follow-up*** items asap
3. Keep ***tracking and posting*** results – whatever you track will improve!

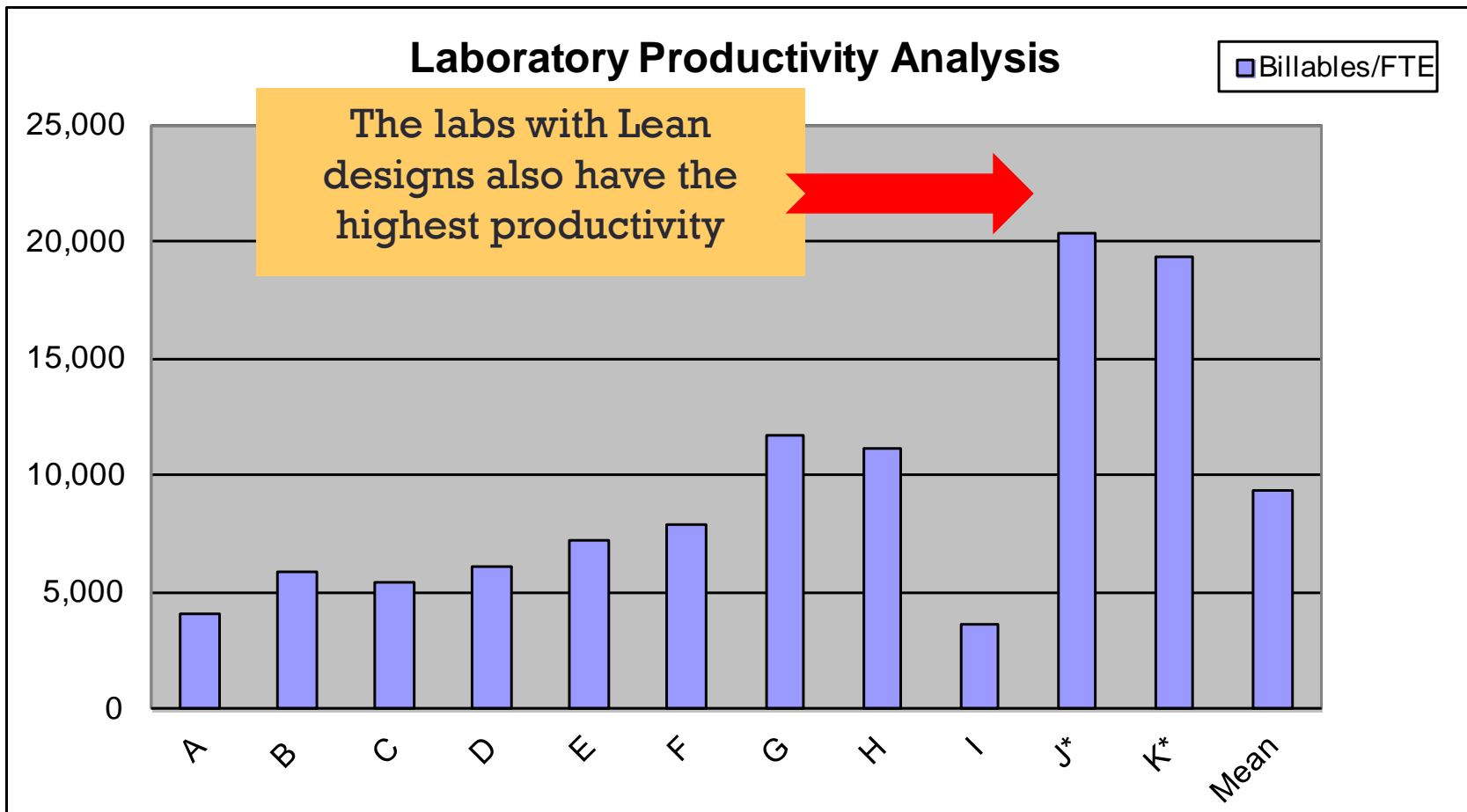
+ My Three Key Lessons from Ten Years of Implementing Lean

1. Develop ***Kaizen eyes*** to SEE waste.
2. Learn early why ***small batches*** are GOOD!
3. People support what they ***help create*** (so don't create without them).

+ Why Lean Design is so Important: More Work in Less Space



+ Why Lean Design is so Important: More Productive Employees





**What are YOUR insiders'
secrets to sustaining a
successful Lean culture?**