



# E103: How to Optimize Your High-Volume Emergency Department

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**HARDIN MEMORIAL HOSPITAL**

# About HMH

- Regional Healthcare Center
- County Owned
- Not-for-profit
- Baptist Health System



# About HMH

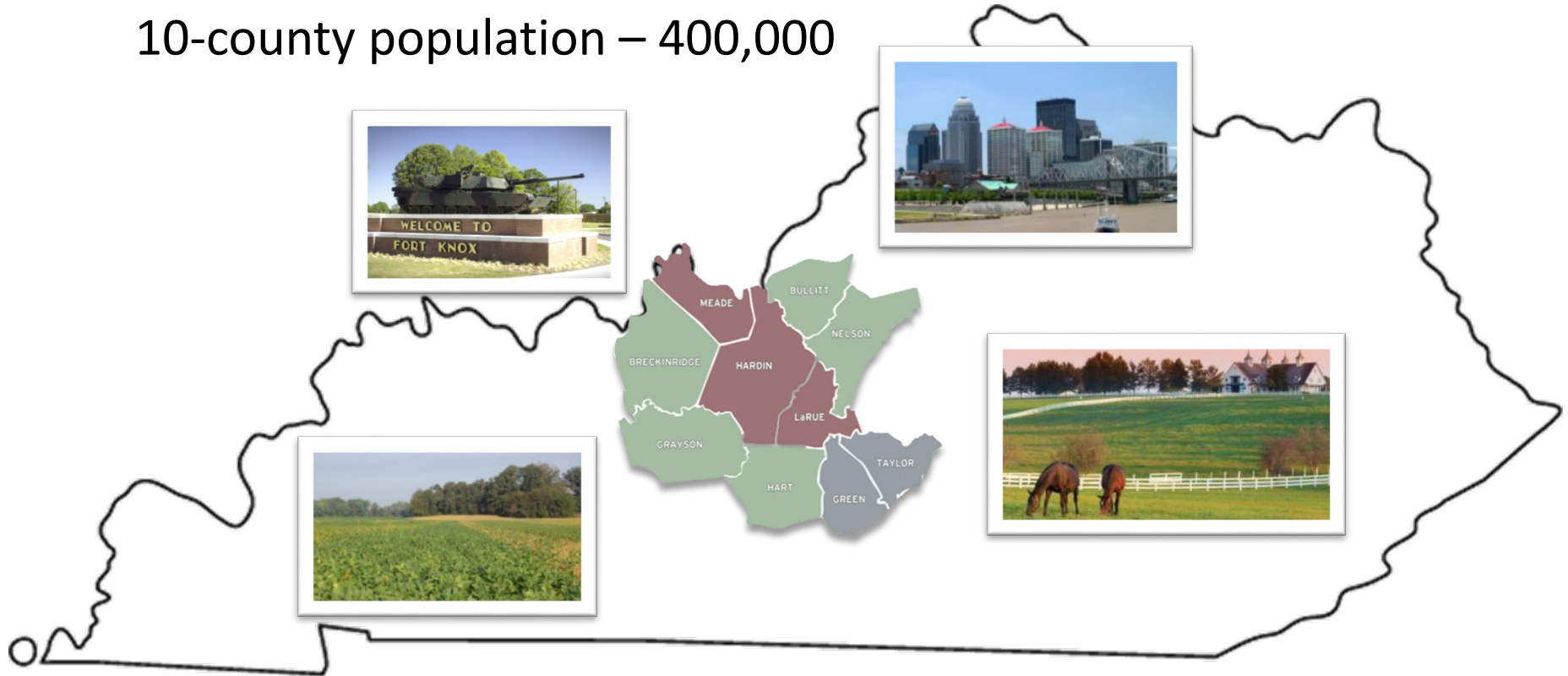
Serving 1/10<sup>th</sup> of Kentucky's Population



- 2nd Largest ED
- 2 Urgent Care Locations
- 270 Acute Care Beds
- 5th Largest Outpatient Volume
- 14th Largest Inpatient Volume

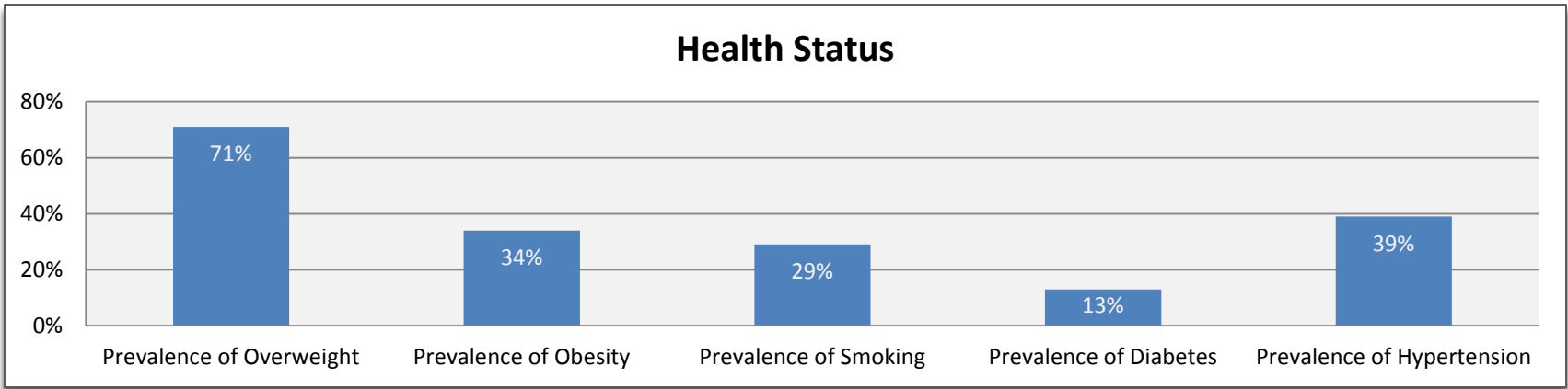
# Communities Served

10-county population – 400,000



# Communities Served

|                                    |       | (U.S. Rate %) |
|------------------------------------|-------|---------------|
| • Persons under 65 with disability | 12.9% | 8.6           |
| • Persons below poverty            | 15.4% | 12.7          |
| • Adults completed high school     | 84.9% | 86.7          |



Demographic Statistics from U.S. Department of Commerce/United States Census Bureau (2016)  
[http://quickfacts.census.gov/qfd/maps/kentucky\\_map.html](http://quickfacts.census.gov/qfd/maps/kentucky_map.html)

Health Statistics from [kentuckyhealthfacts.org](http://kentuckyhealthfacts.org): Centers for Disease Control (CDC) and Kentucky Department for Public Health, Behavior Risk Factor Surveillance System Data (BRFSS) as analyzed by the University of Kentucky Markey Cancer Control Program and College of Public Health.  
[http://www.kentuckyhealthfacts.org/data/location/show.aspx?cat=1%2C2%2C3%2C5%2C8%2C11&loc=47#src\\_3](http://www.kentuckyhealthfacts.org/data/location/show.aspx?cat=1%2C2%2C3%2C5%2C8%2C11&loc=47#src_3)



# Emergency Services

- 70,000+ annual volume
- 69 private beds
- Minor Treatment Area
- Certified Nurses
- Imaging



# Volumes by Acuity Level

70,000 + visits annually

| ESI 1 | ESI 2 | ESI 3 | ESI 4 | ESI 5 | PSYCH |
|-------|-------|-------|-------|-------|-------|
| 1%    | 8%    | 57%   | 29%   | 4%    | 1%    |

# ED Volumes

16% growth between 2010 -2014  
18% growth between 2014 - 2018

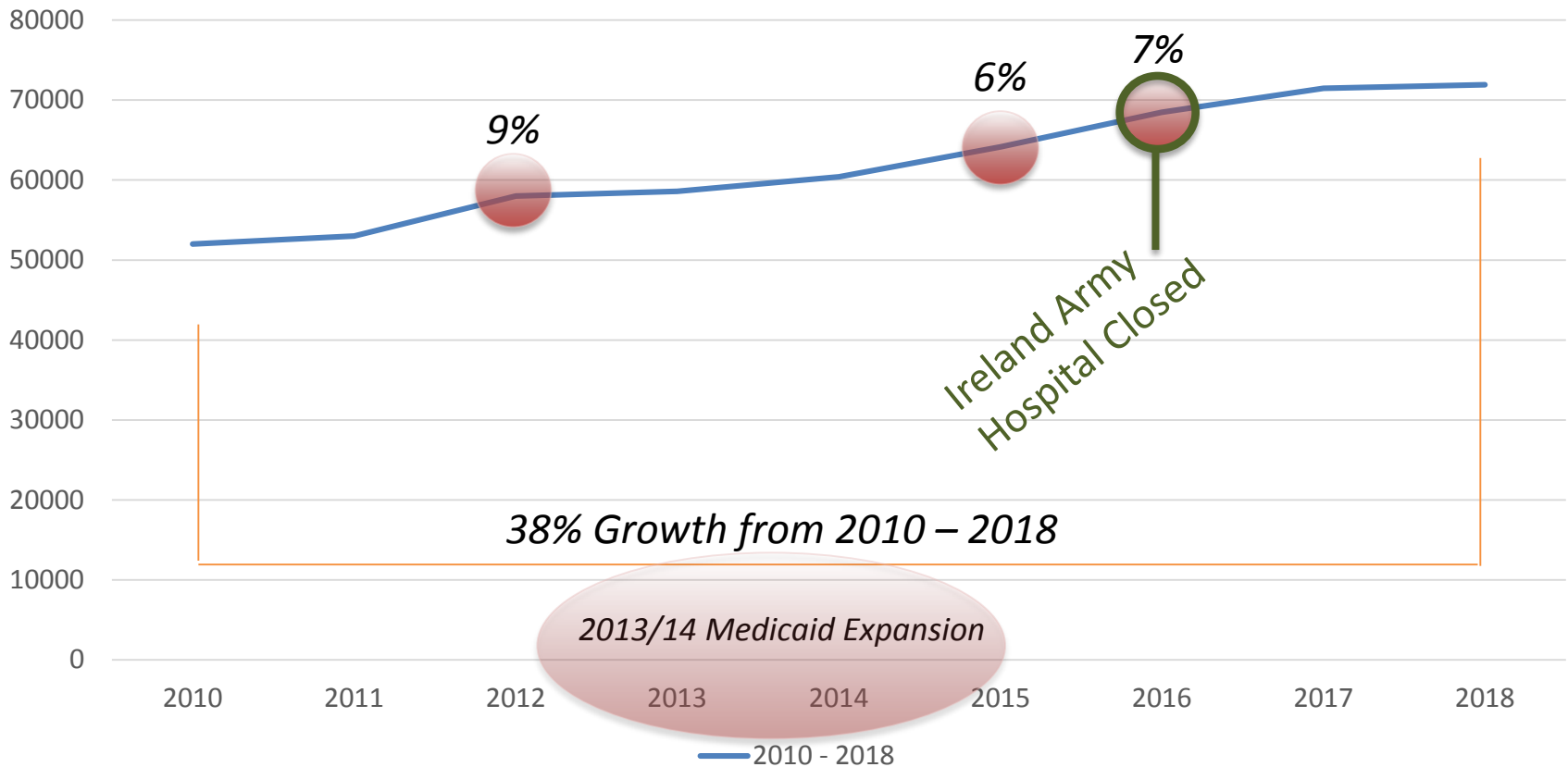
Annual ED Volumes

|                        | 2013          | 2014          | 2015          | 2016          | 2017          | 2018          |
|------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| <b>Total ED Volume</b> | <b>58,588</b> | <b>63,230</b> | <b>69,217</b> | <b>69,612</b> | <b>71,479</b> | <b>73,065</b> |



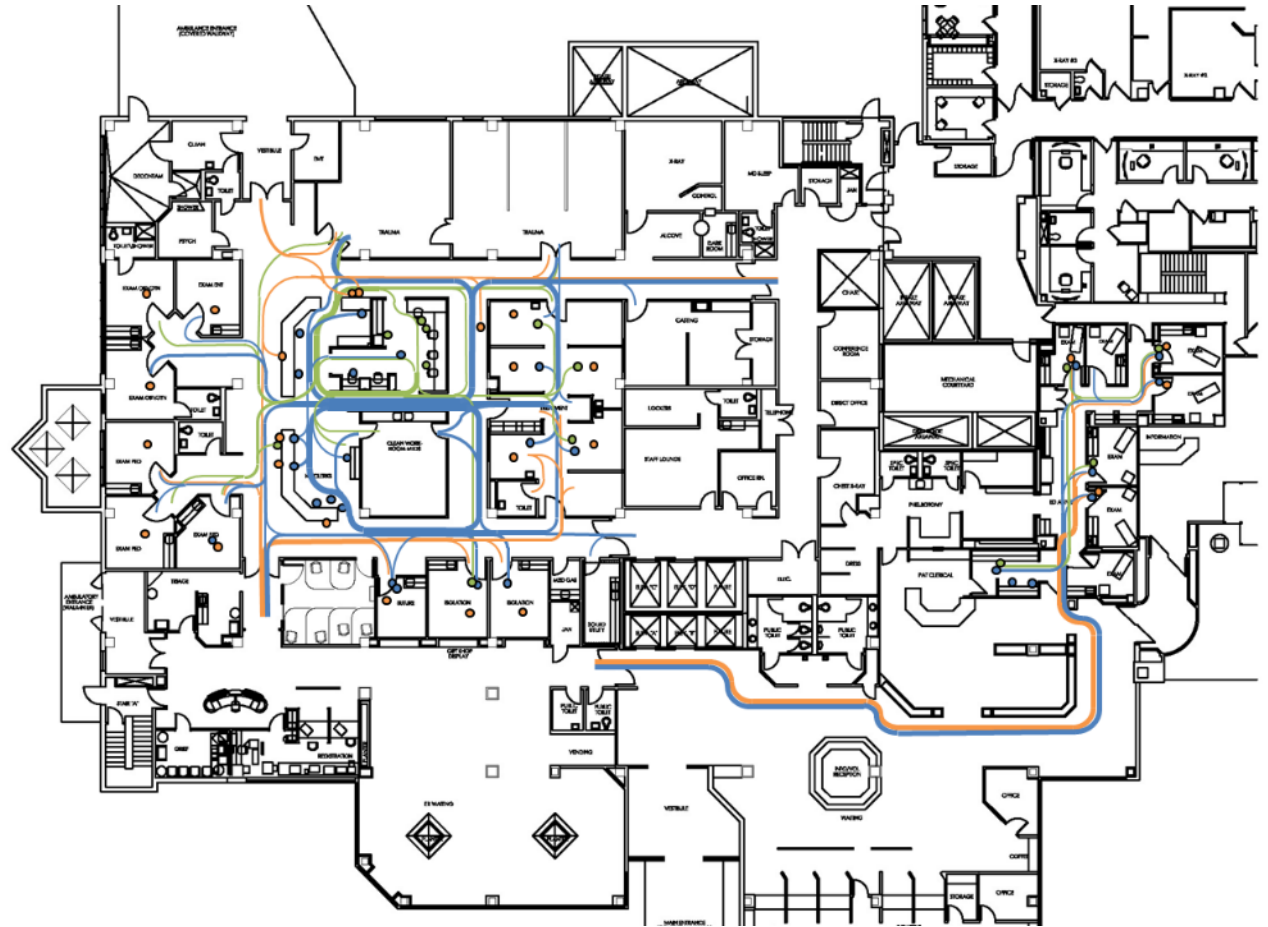
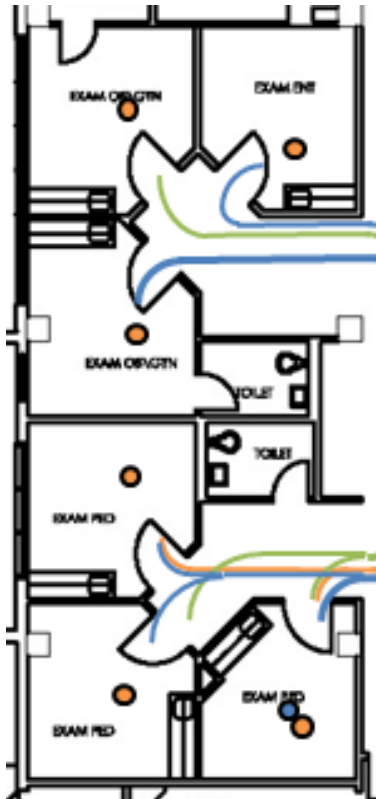
# Eight Year Census Trend

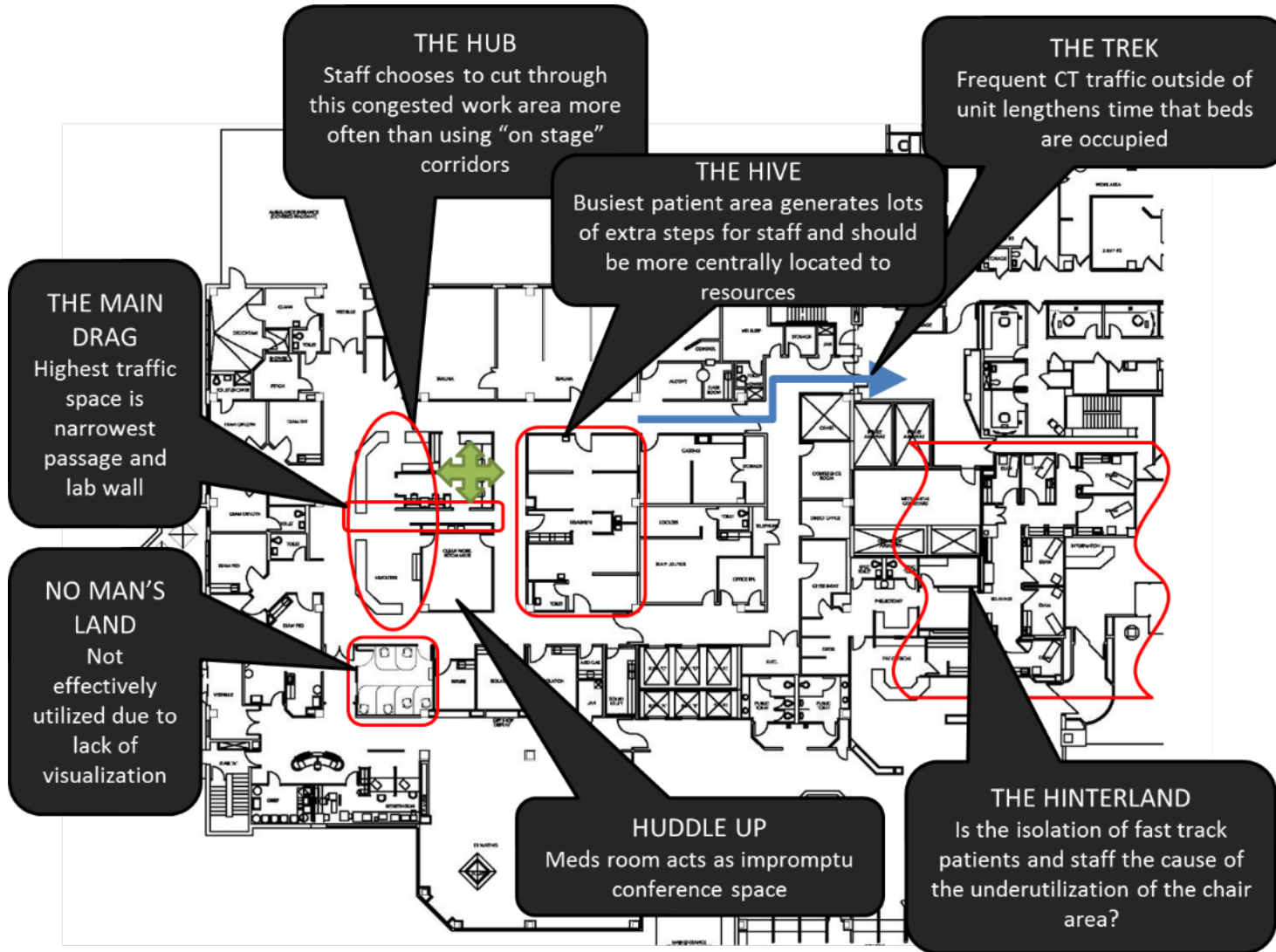
Total Patient Volumes 2010 - 2018



BEFORE: 52,000 Visits / 27 Exam Rooms / 16,000 dsf  
Strong Dedicated Team

RNs 58  
Techs 32  
LPNs 4

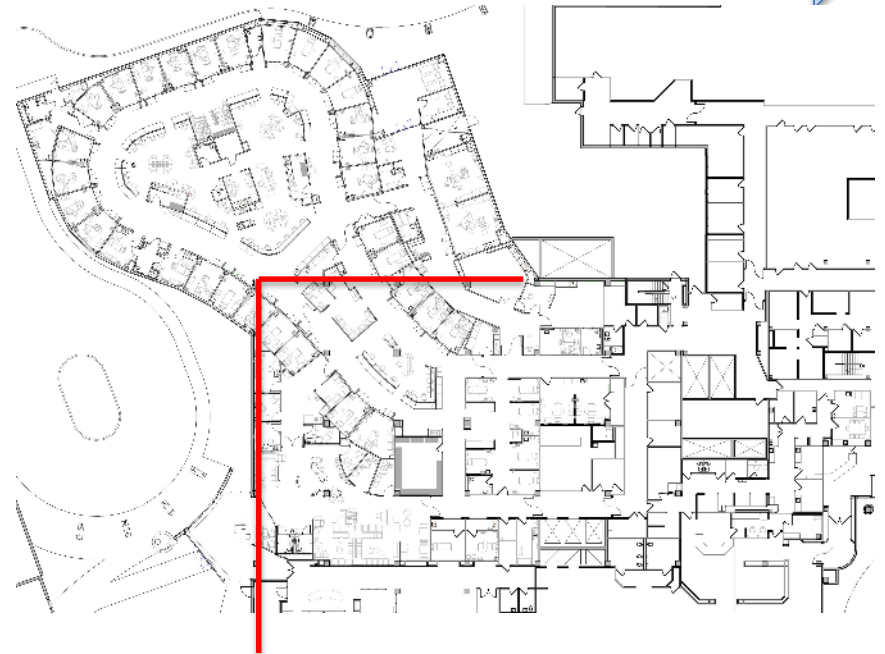
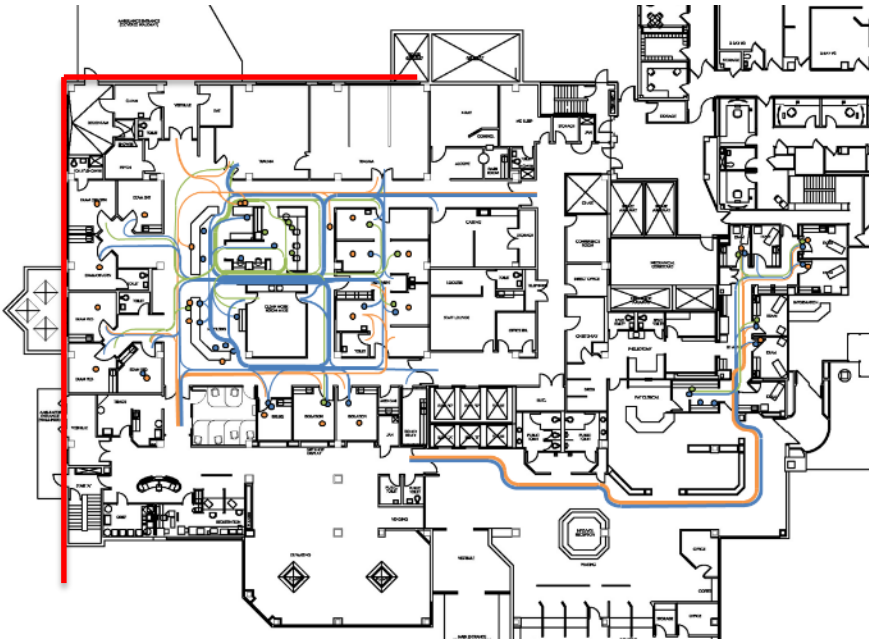




# Renovate and Expand

BEFORE 20,000 DSF

AFTER 34,000 DSF



### AFTER:

65 Exam Rooms / 34,000 dsf

Strong Dedicated Team

RNs 70

Techs 39

LPNs 9

### BEFORE:

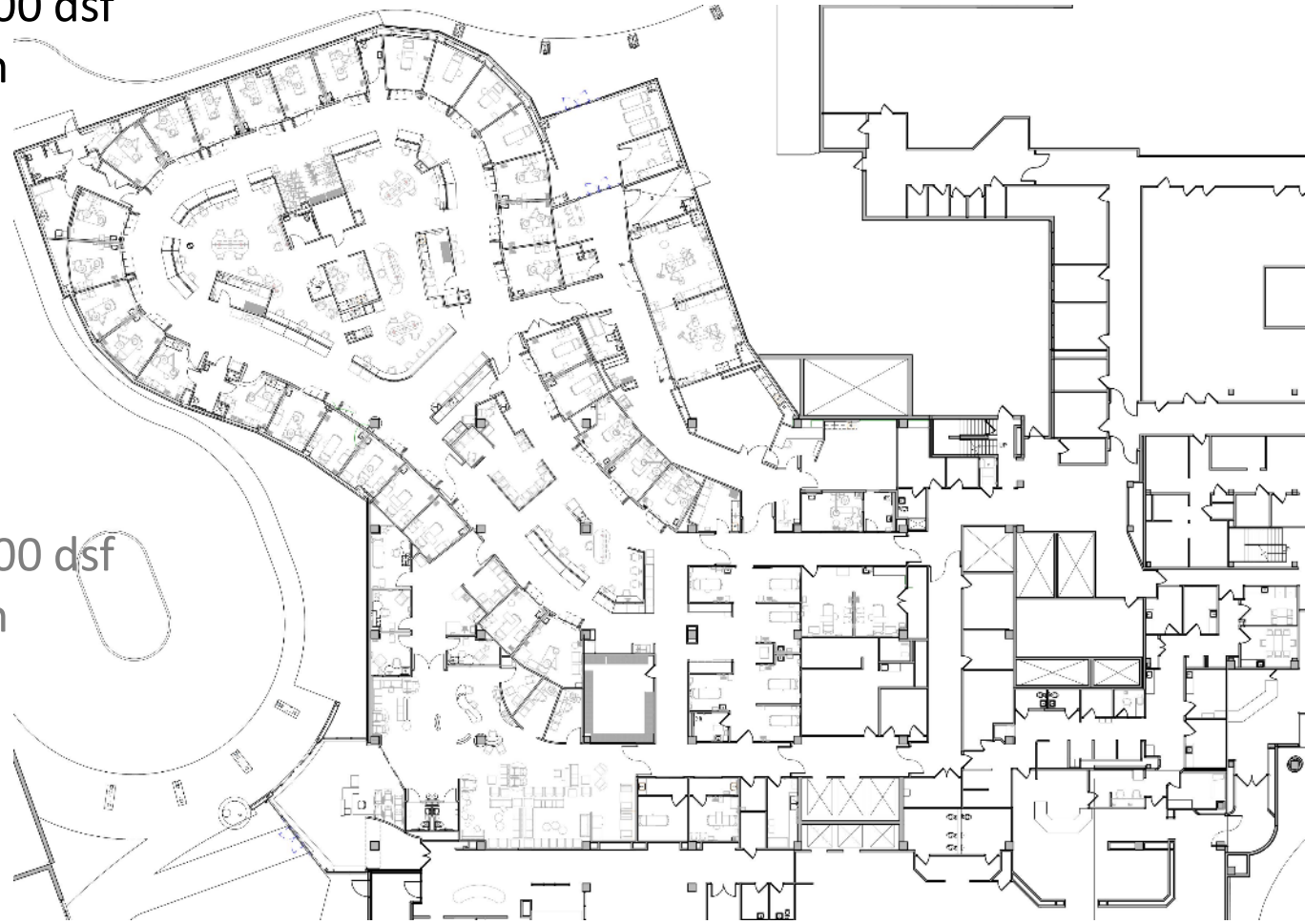
27 Exam Rooms / 16,000 dsf

Strong Dedicated Team

RNs 58

Techs 32

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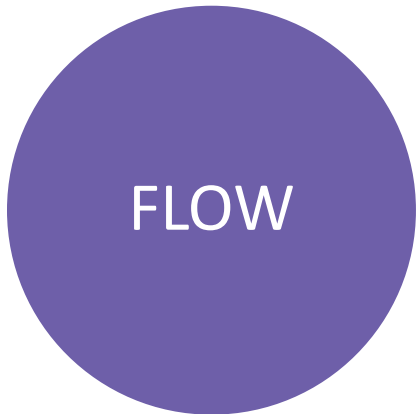


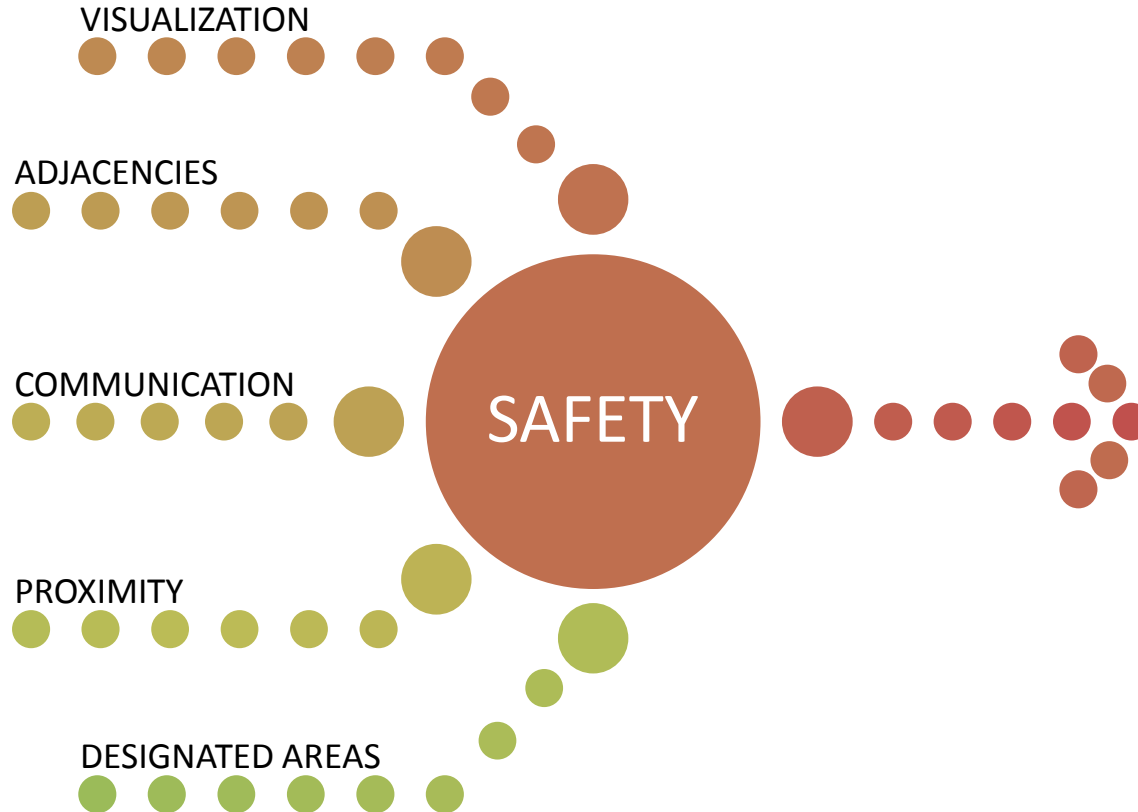


# Project Goals & Objectives











# Value Stream Mapping





# Mock Ups

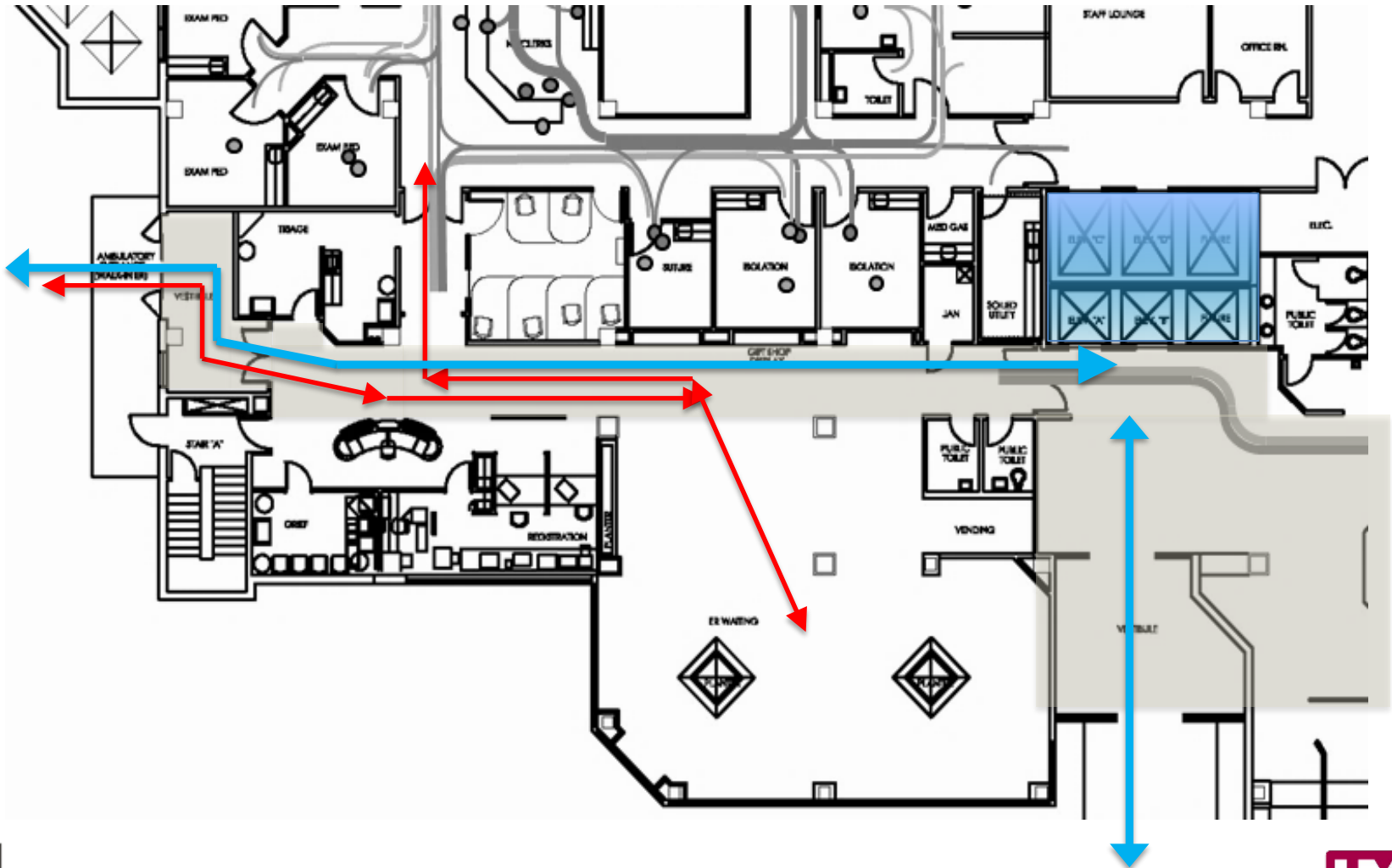




Saf

# Entry (Before)

PARKING GARAGE





# Entry (After)







# Typical Exam Room



THEN



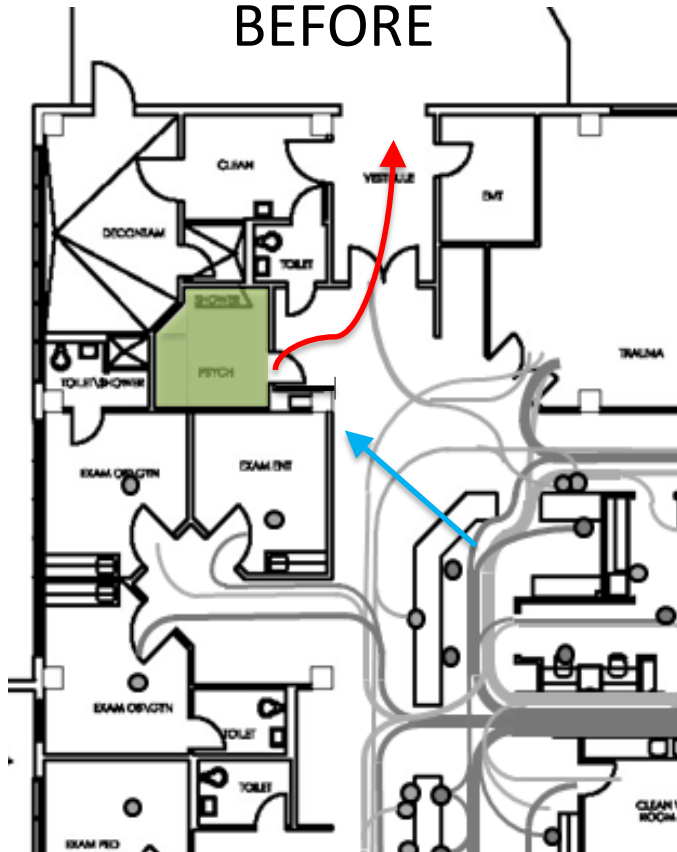
NOW



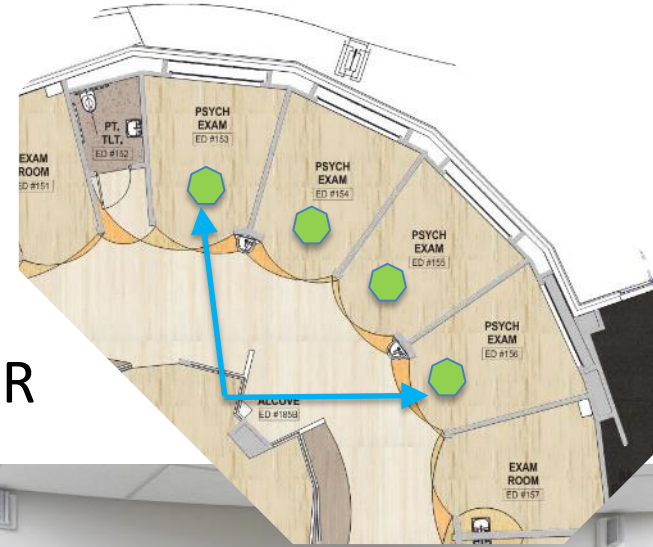


# Psych Room

BEFORE



AFTER







# Increase Visualization





# Lessons Learned



- Visualization!
- Larger space = Communication Impact...



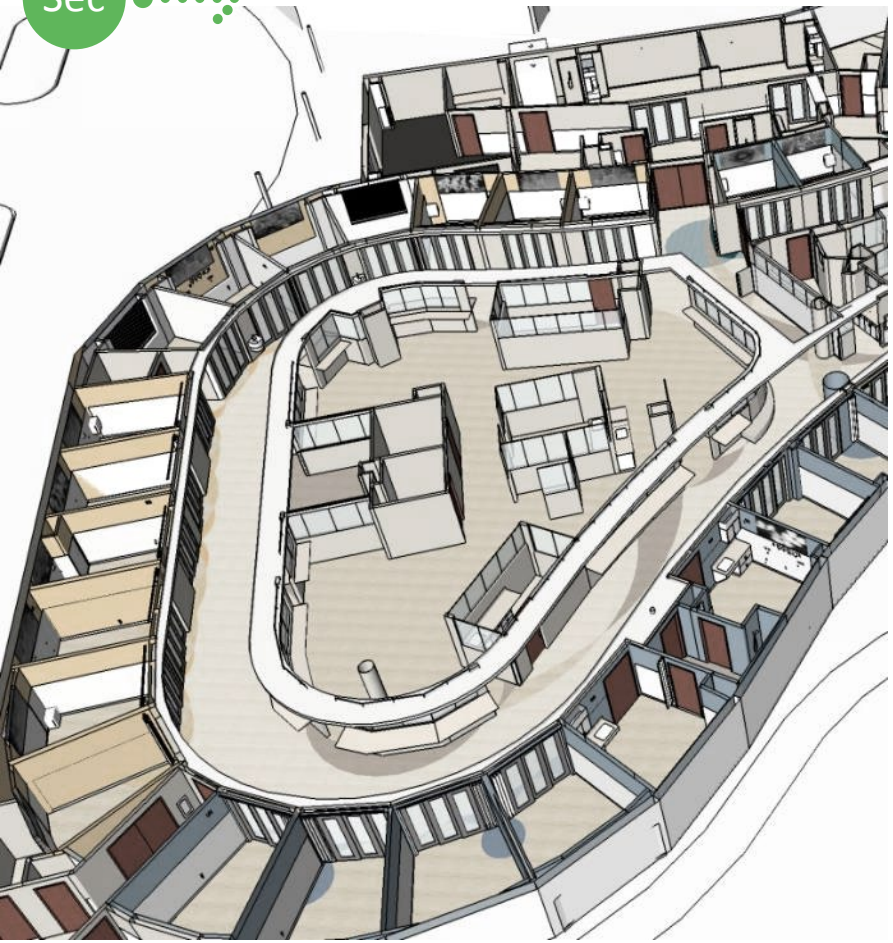
Image from Vocera.com





Saf ●●●●●  
Sec ●●●●●

# Active Shooter Risk









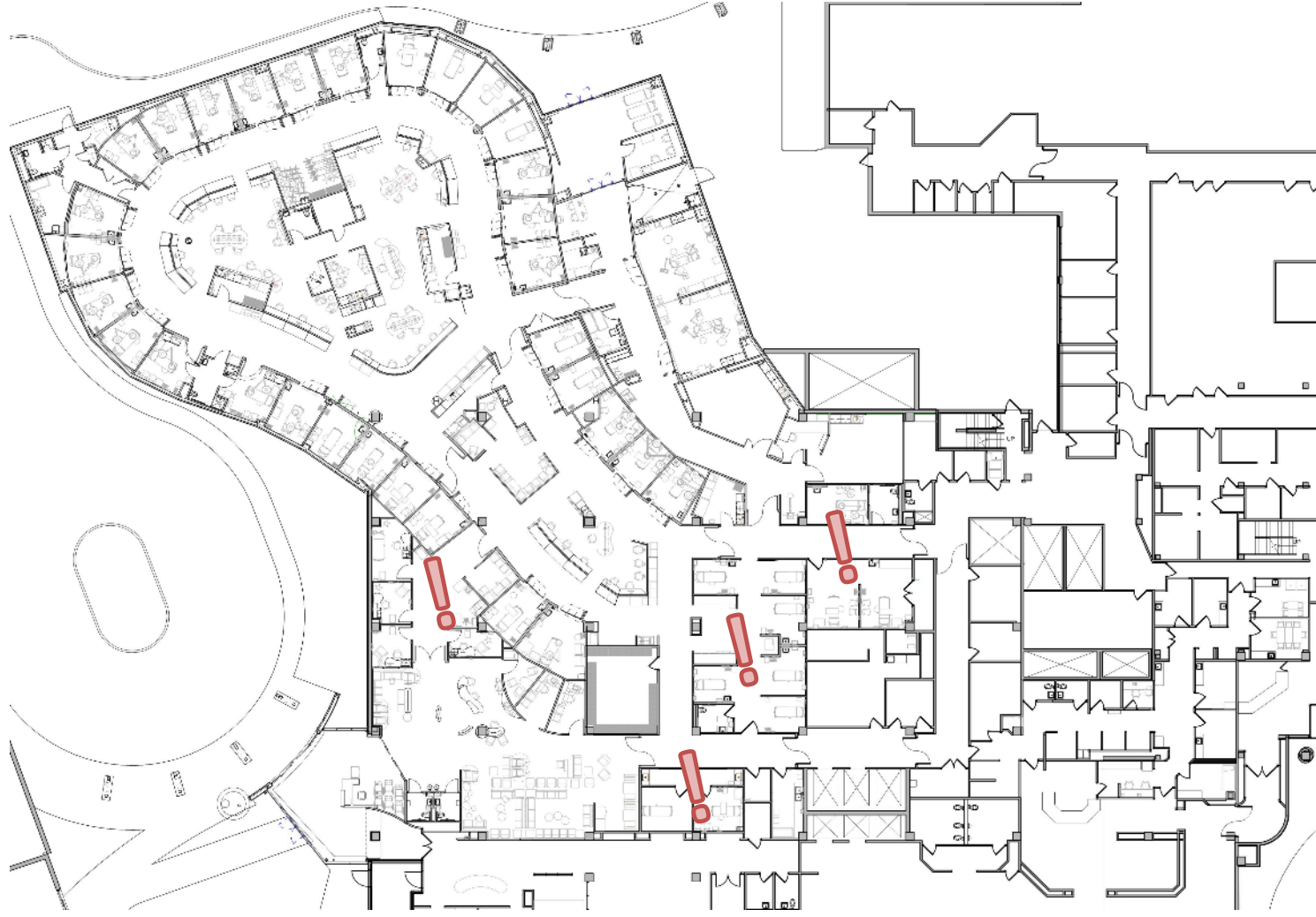
# Entry





Sec 

# Avoid Isolation & Trapping



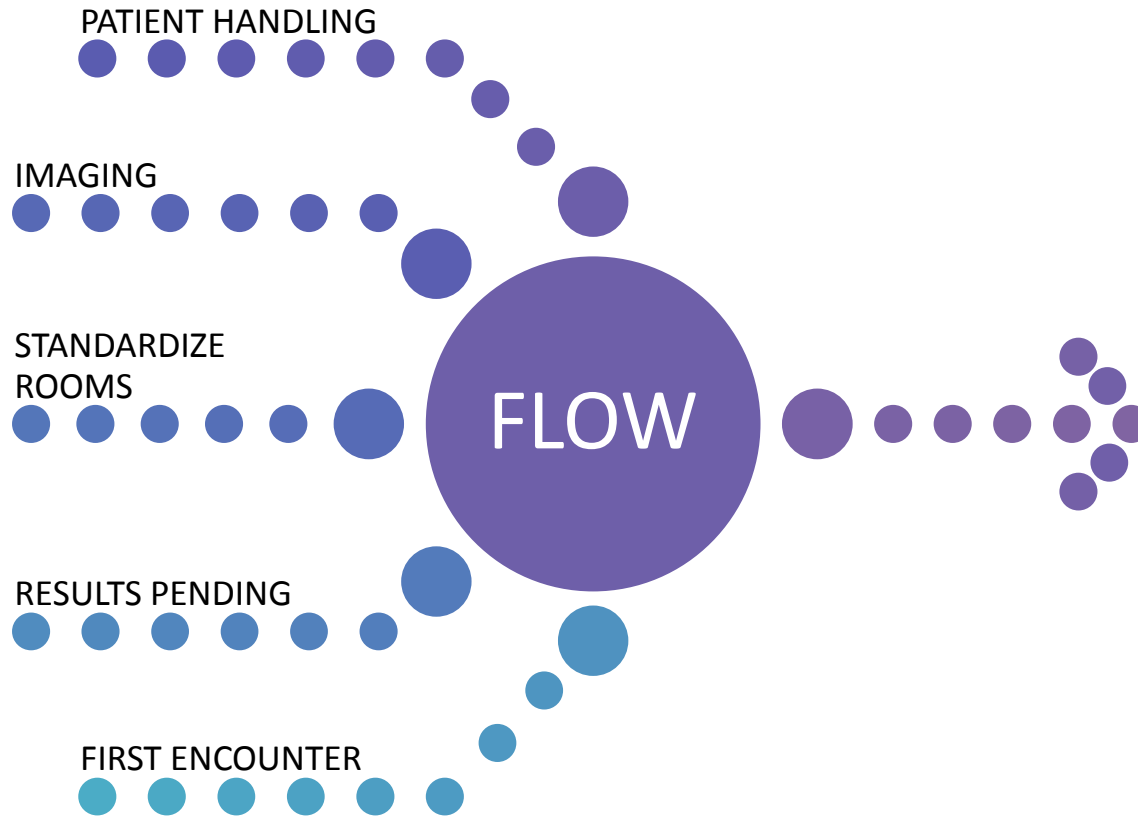
GBBN



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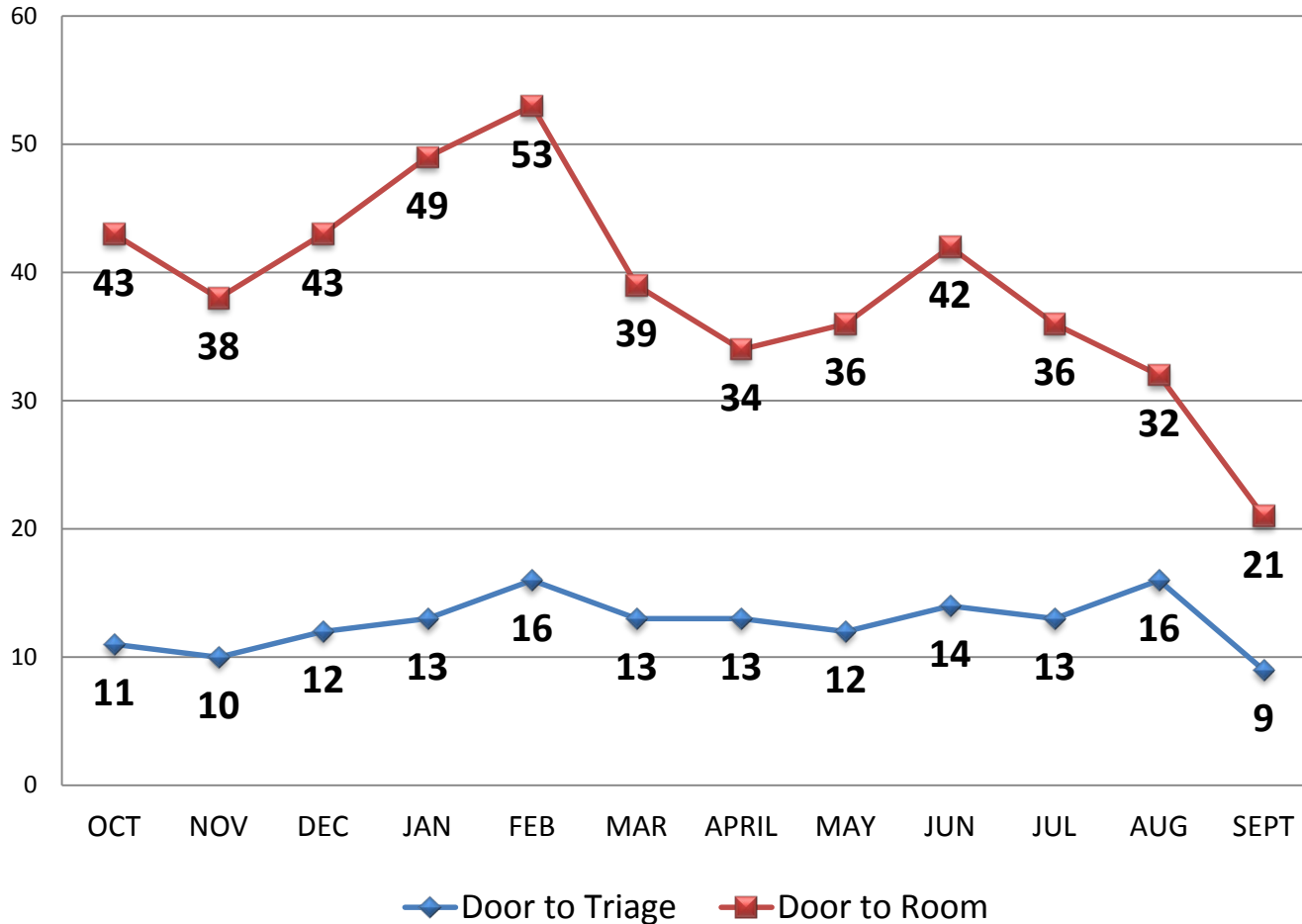








# ED Arrival Throughput Times





# First Encounter



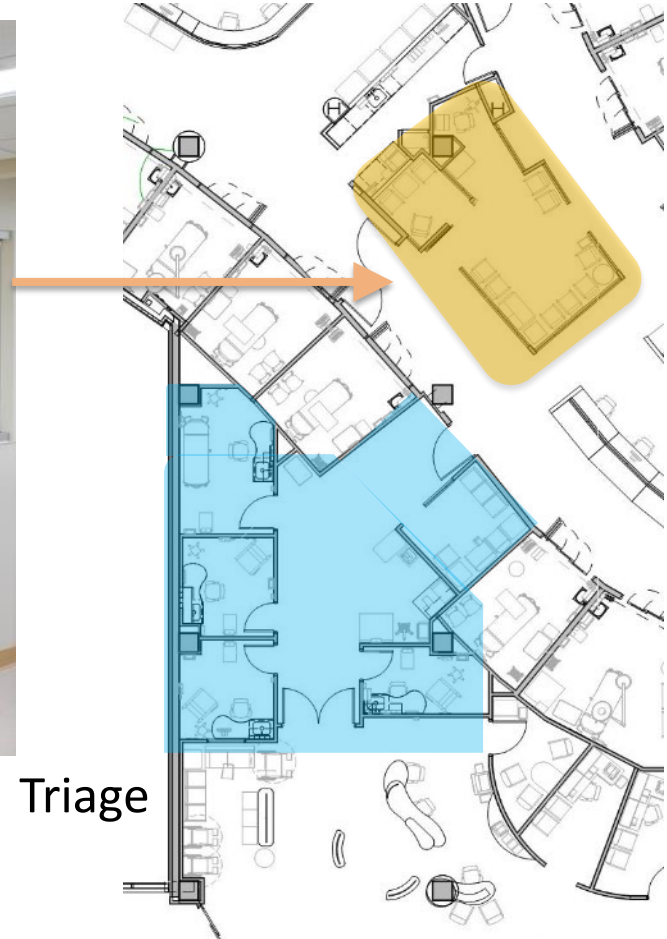




# Opportunities



Results Pending Area



Triage



# Lab Process

Dept Lab  
(Central)



Triage Lab





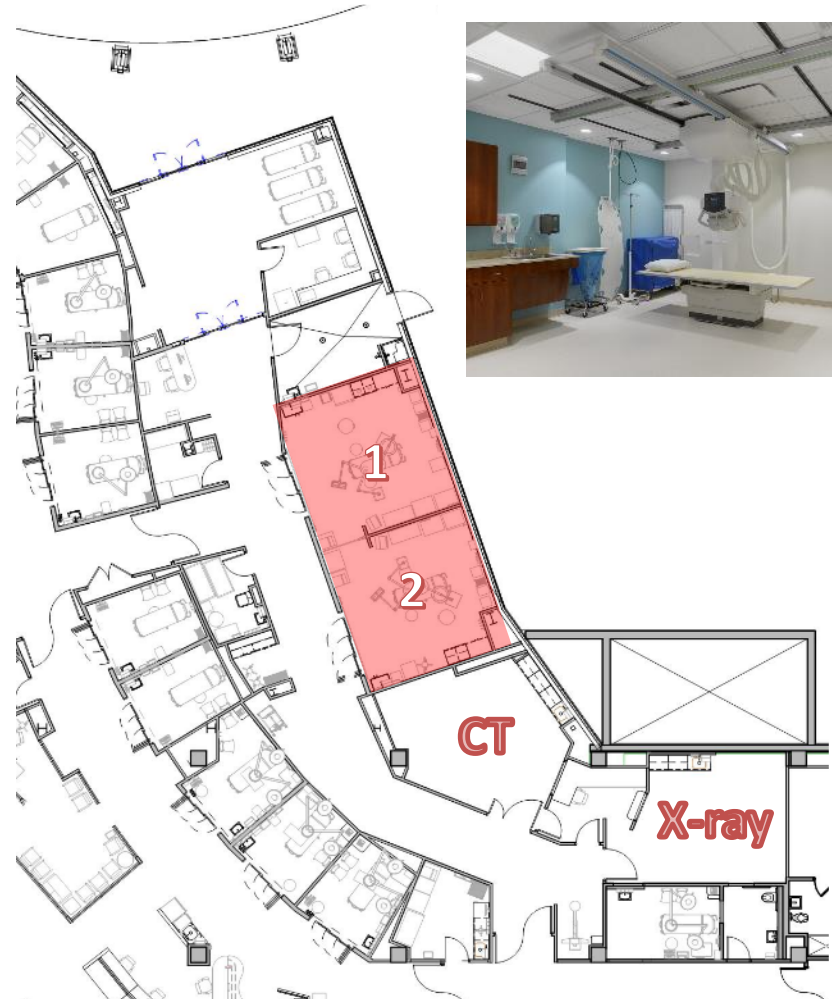
# F Staff Areas by Color Zone & Acuity







# Trauma Bays



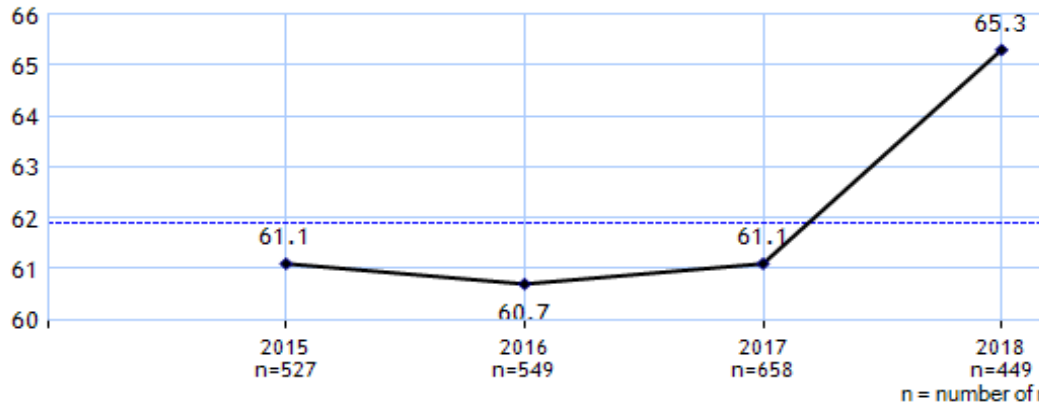


# F Annual ED Patient Experience

## Overall

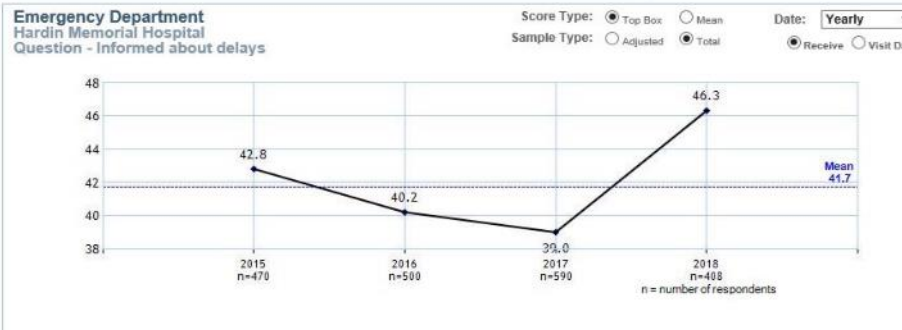
Emergency Department  
Hardin Memorial Hospital

Score Type:  Top Box  
Sample Type:  Adjusted



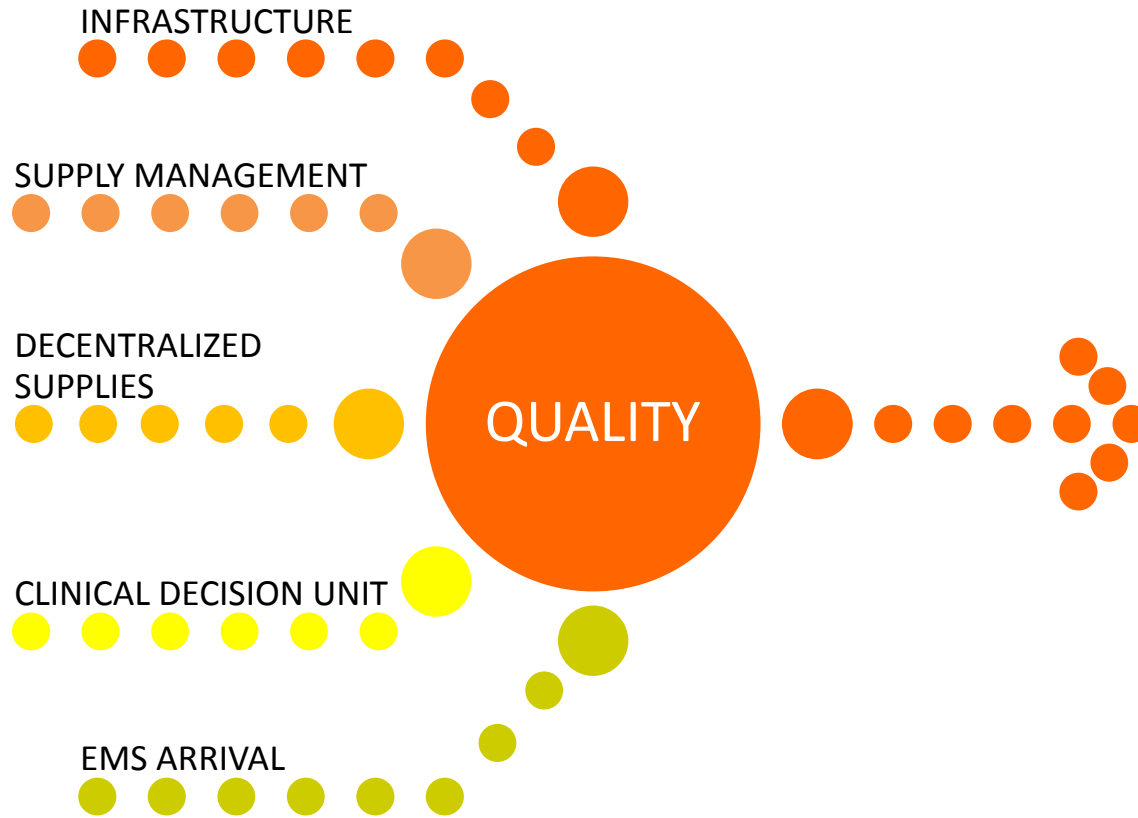
| Standard Scores    | Jan '18 - Mar '18 |     | Apr '18 - Jun '18 |     | Jul '18 - Sep '18 |     |
|--------------------|-------------------|-----|-------------------|-----|-------------------|-----|
|                    | Score             | n   | Score             | n   | Score             | n   |
| Overall            | 64.2              | 121 | 62.9              | 145 | 70.2              | 160 |
| Arrival            | 54.3              | 116 | 55.4              | 136 | 65.7              | 154 |
| Nurses             | 71.1              | 116 | 67.6              | 136 | 73.2              | 155 |
| Doctors            | 67.7              | 113 | 68.0              | 135 | 71.3              | 155 |
| Tests              | 69.8              | 98  | 65.2              | 114 | 73.8              | 135 |
| Family or Friends  | 70.0              | 93  | 68.6              | 104 | 73.1              | 126 |
| Overall Assessment | 60.5              | 120 | 59.1              | 145 | 66.2              | 159 |

## Informed About Delays



## Staff Care About You As A Person







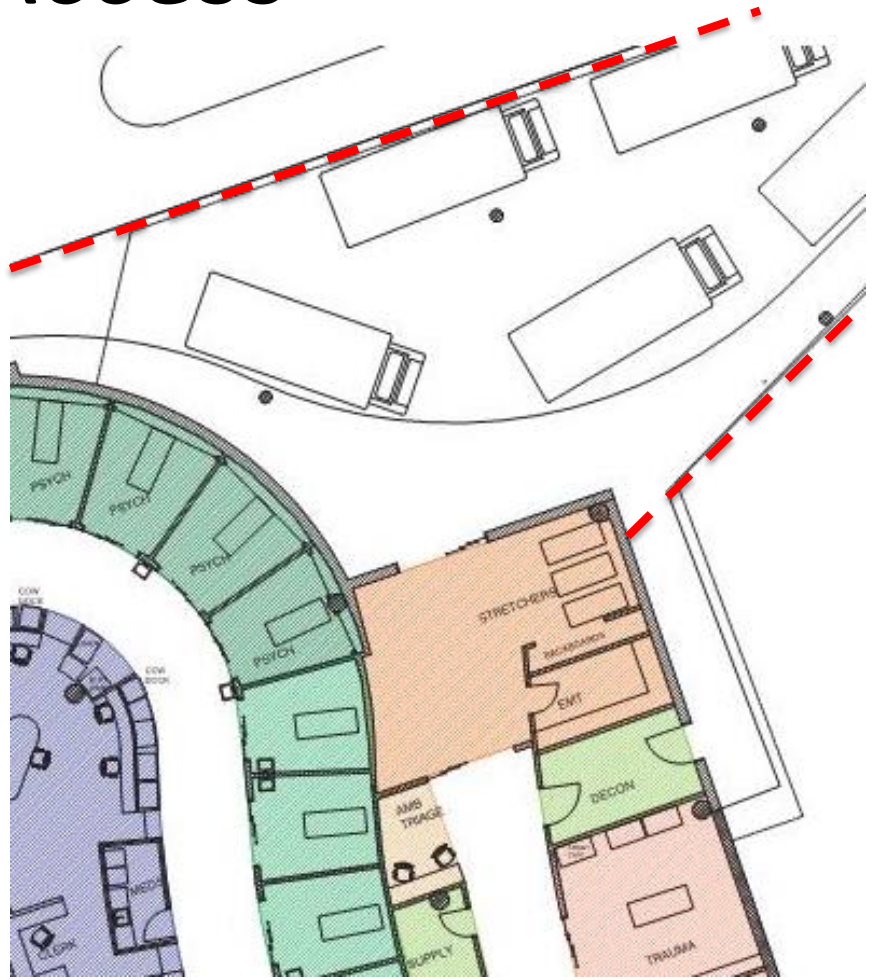
# EMS Access



**BEFORE:** 2 ambulances  
under cover

**AFTER:** 6 ambulances  
under cover

*(Increased capacity and improved traffic flow)*





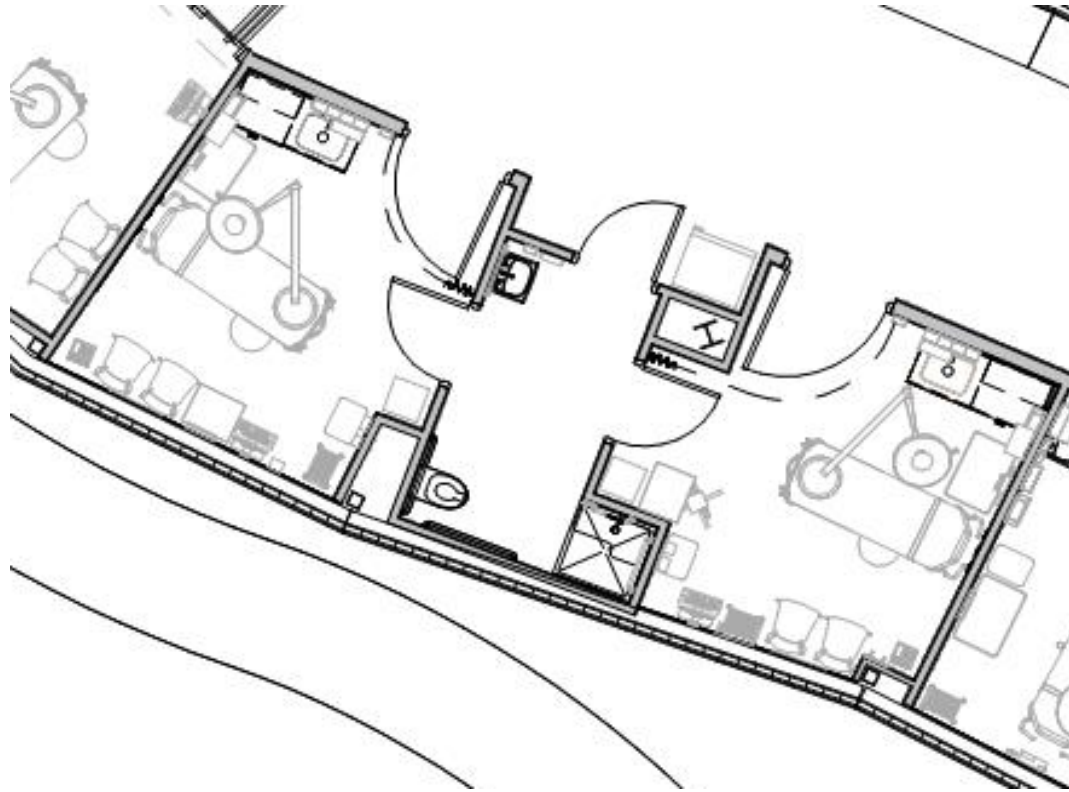
# Medication and Supply Access





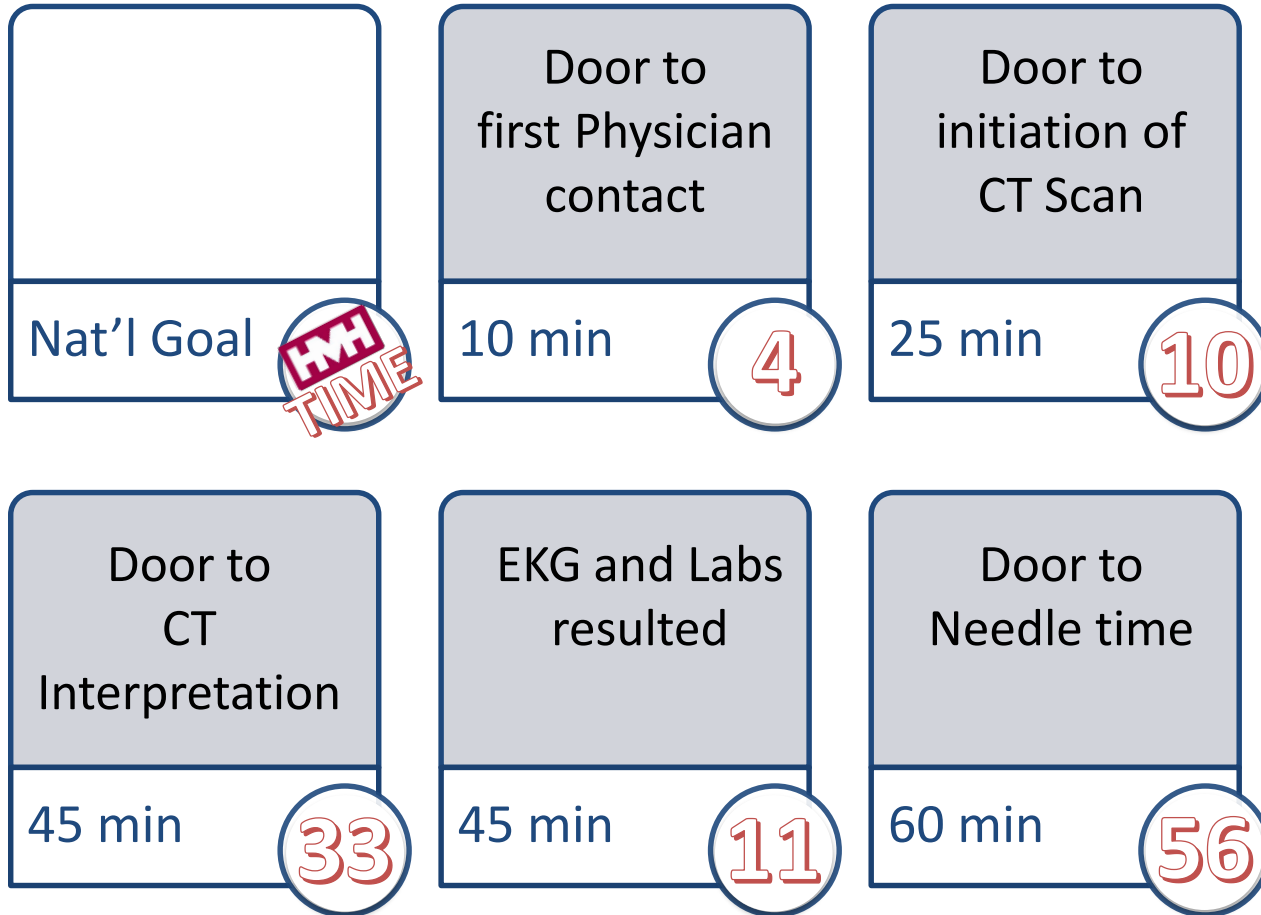


# Improved Sexual Assault Care Environment





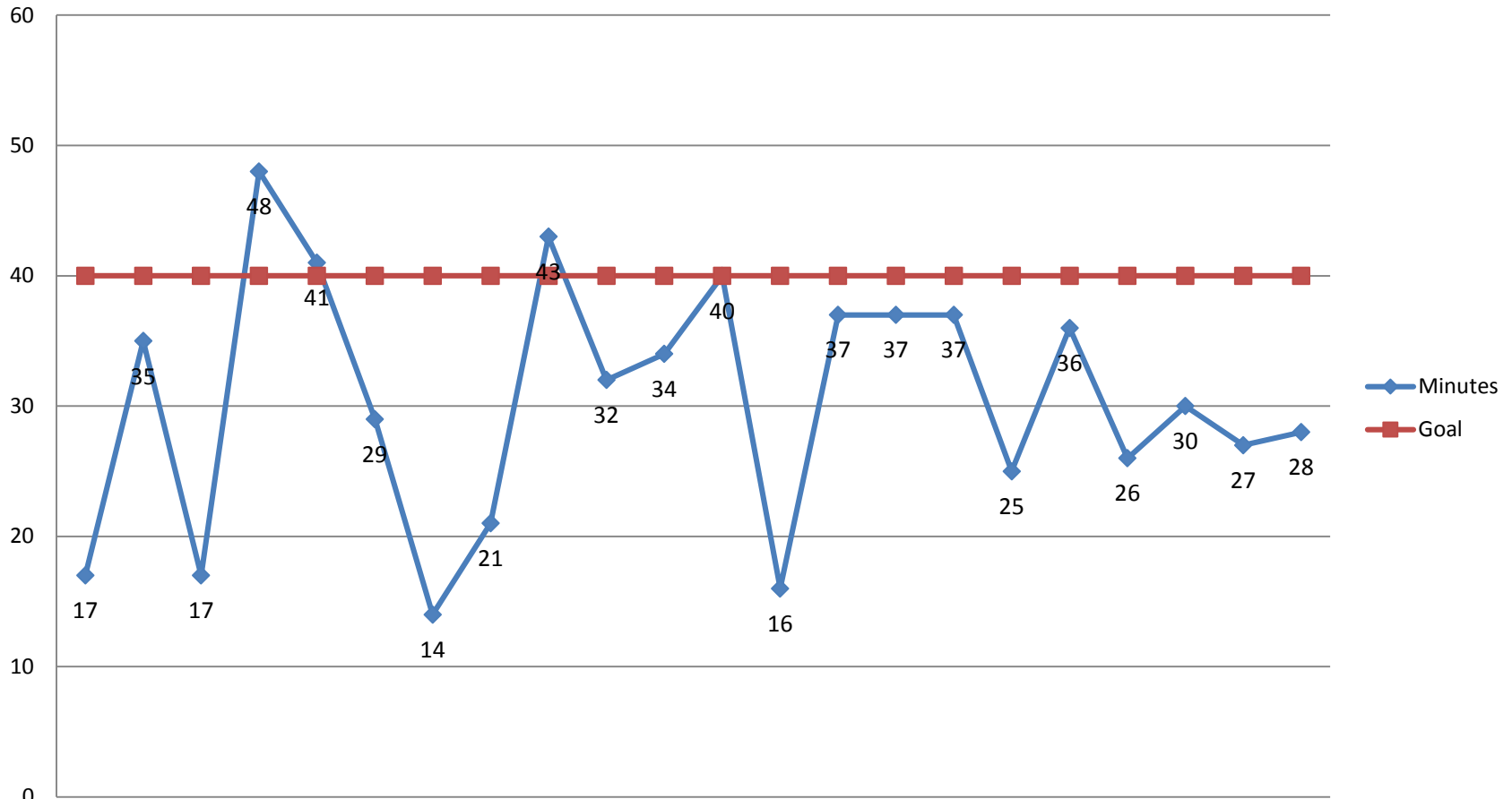
# Stroke Alert: National Goals

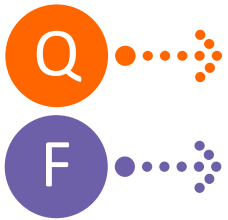




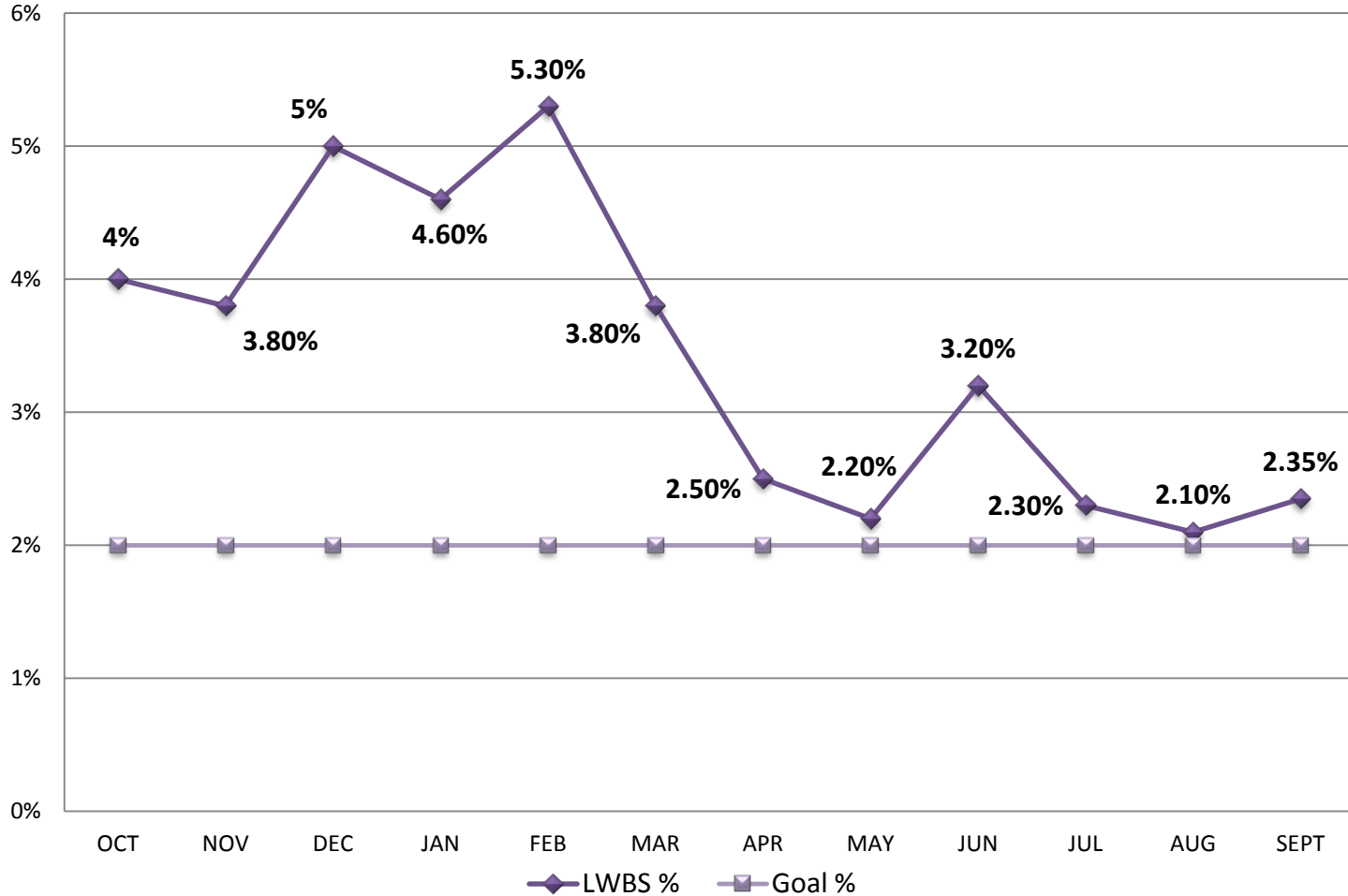
# STEMI Data (June – October)

## Door to Cath Lab Times





# Left Without Being Seen





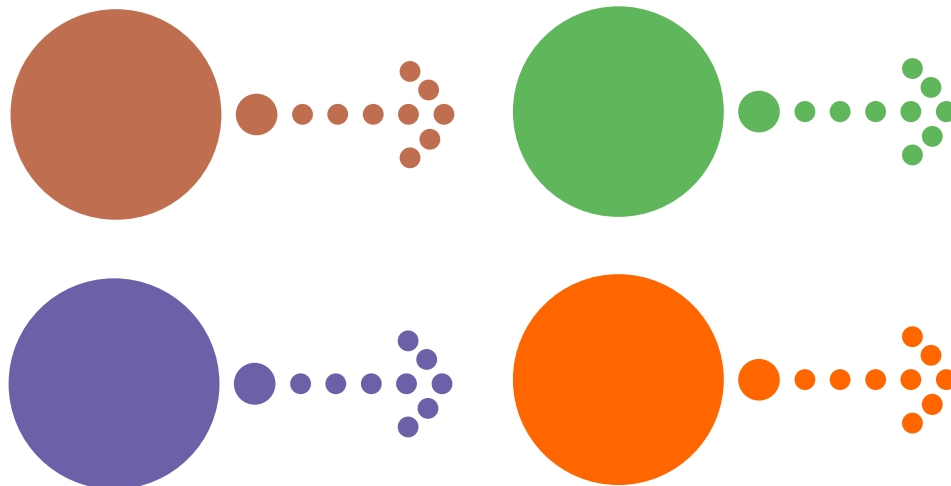


# Key Carryover Concepts

- Converted Storage Room = RPA concept
- Electronic Tracking of Patients
- Using adjacent radiology for pending admissions patients
- Overflow to Triage (evaluating adding a provider to Triage)
- Flex patients to Minor Treatment Area

# Opportunities for Improvement

- Visualization and Security Threats
- Continue to Maximize space for volume growth
- Optimize Patient to Room assignments
- Regenerative Space for Staff



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Principal  
GBBN Architects

## SPECIAL THANKS:

HMH Board of Trustees

Dennis Johnson

Tom Carrico

Steve White

Deanna Parker

Chris Stucker

&

The Entire Emergency Department Team



Design Architect



Architect of  
Record



WHITTENBERG  
CONSTRUCTION



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