

# Industrial Engineering Opportunities in Healthcare

Ryan Goodroe  
Clemson University - Class of 1997



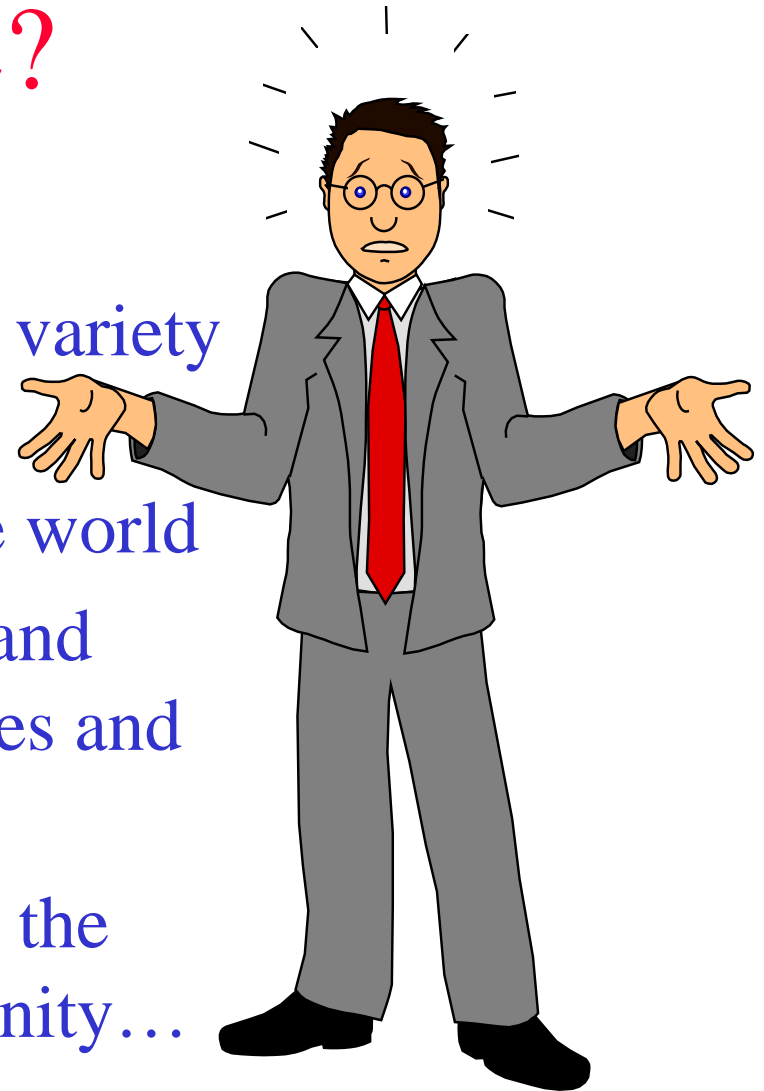


# PREMIER

- Healthcare alliance owned by or affiliated with over 1800 hospitals (315,000 beds)
- Market coverage in all 50 states
- \$10 billion in annual purchasing volume
- Combined member Net Rev. = \$88.5 billion
- Premier's Core Purpose: *To improve the health of communities.*

# Why Healthcare?

- It will ALWAYS be needed
- It provides an almost endless variety of opportunities
- It's the largest industry in the world
- Work primarily with people and processes rather than machines and products
- Make a significant impact on the lives of people in the community...  
...not just “the bottom line”



# *What is a Management Engineer?*



- Industrial Engineer in a hospital environment
- Helps integrate people, equipment, facilities, and other resources to improve work results
- Uses skills learned in IE (Process Design, Flowcharting, Layout Optimization, Forecasting Methodologies, etc.)
- Performs cost-saving & quality improvement projects

# Typical Management Engineering Responsibilities

- Operational Analysis
  - Example: Information Systems' Response Center
- Staffing Analysis & Productivity Standards
  - Example: Nuclear Medicine
- Facility Design
  - Example: Emergency Department Expansion
- Forecasting of System Capacity
  - Example: Bed Capacity Analysis

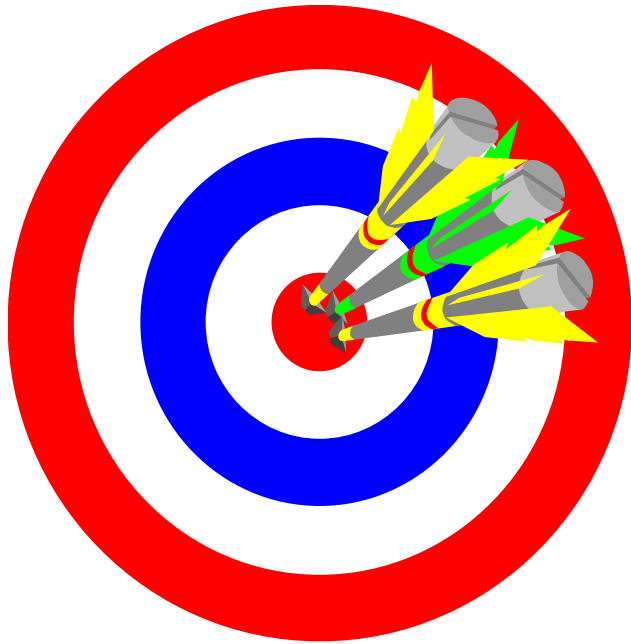


Goal: To move hospitals toward the top quartile in both cost and quality by...



- ...completing operational projects that increase productivity.
- ...increasing the availability and use of data in decision making, analysis, and monitoring.
- ...identifying the most efficient ways to utilize space, time, manpower, and other resources.
- ...serving as facilitators & educators for quality improvement throughout the hospital.

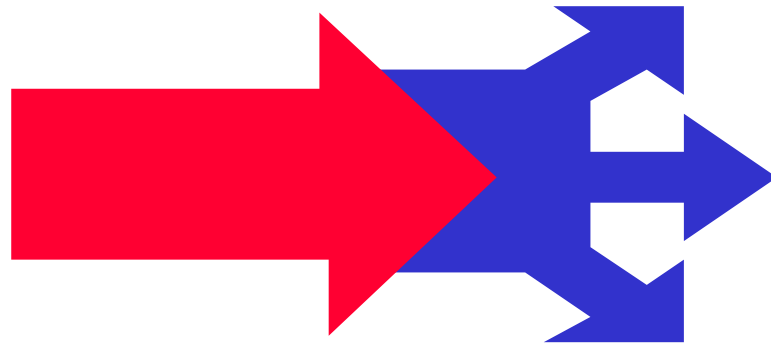
# *How are projects targeted?*



- Requests by hospital administration
- Quality or customer service complaints from patients
- Internal productivity standards
- Comparative data

# *Process Redesign:*

## Linen Distribution Process

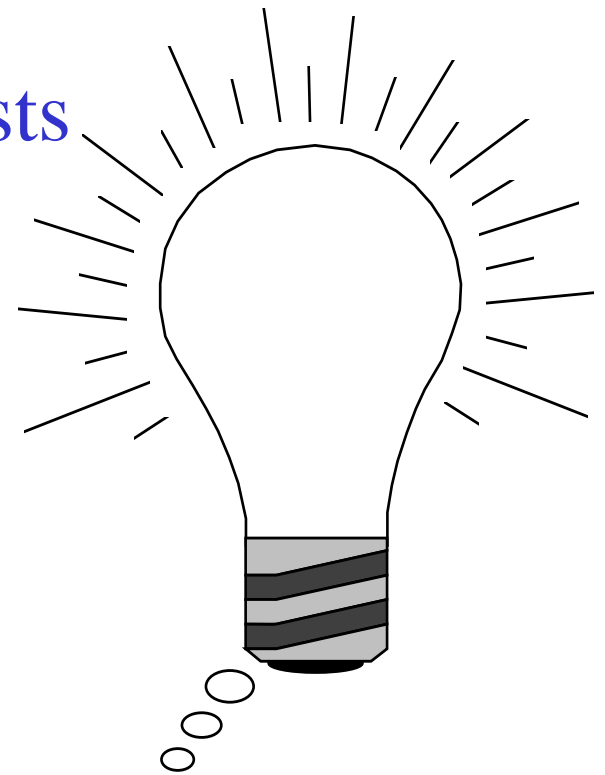


Johnson City Medical Center

Johnson City, TN

# *Reasons for the project:*

- Low satisfaction ratings
- Increasing linen replacement costs
- Complaints from staff members
- No standard processes in place



## *Project Observations:*



- Inconsistent timing and quantity of deliveries resulted in hoarding
- Single delivery per day could not keep areas sufficiently stocked (frequent stock-outs)
- Inconsistent process for storing linens resulted in searching time
- Par levels existed but were not followed

## Linen Usage and Processing Cost Comparison

|   | Usage<br>Oct-96 | Usage<br>Oct-97 | % Change<br>in Usage | Laundering<br>Cost per Item | Process Cost<br>Increase<br>(Savings) |
|---|-----------------|-----------------|----------------------|-----------------------------|---------------------------------------|
| Bath Blankets   | 1.88            | 1.86            | -0.6%                | \$1.68                      | (\$173)                               |
| Fitted Sheets   | 1.50            | 1.44            | -4.2%                | \$2.08                      | (\$1,177)                             |
| Flat Sheets   | 1.95            | 2.00            | 2.6%                 | \$2.08                      | \$938                                 |
| Incontinent Pads  | 1.08            | 1.34            | 23.9%                | \$2.36                      | \$5,479                               |
| Patient Gowns   | 1.82            | 1.61            | -11.6%               | \$1.81                      | (\$3,443)                             |
| Thermal Blankets  | 0.27            | 0.23            | -13.4%               | \$7.10                      | (\$2,322)                             |
| Towels  | 4.42            | 3.38            | -23.5%               | \$0.63                      | (\$5,862)                             |
| Washcloths  | 11.78           | 8.83            | -25.0%               | \$0.06                      | (\$1,589)                             |
| Increase (Savings) in Laundry Process Expense per Month |                 |                 |                      |                             | (\$8,149)                             |
| Prorated Annual Increase (Savings) in Process Expense   |                 |                 |                      |                             | (\$97,788)                            |

## Stock-out Cost Comparison

|  | Prior to Change | After Change   |
|--|-----------------|----------------|
| <b>Number of Stock-out Calls Per Day</b>     | <b>55</b>       | <b>5</b>       |
| <b>Annual Labor Costs of Stock-out Calls</b> | <b>\$15,000</b> | <b>\$1,365</b> |
| <b>Annual Cost Savings = \$13,635</b>        |                 |                |

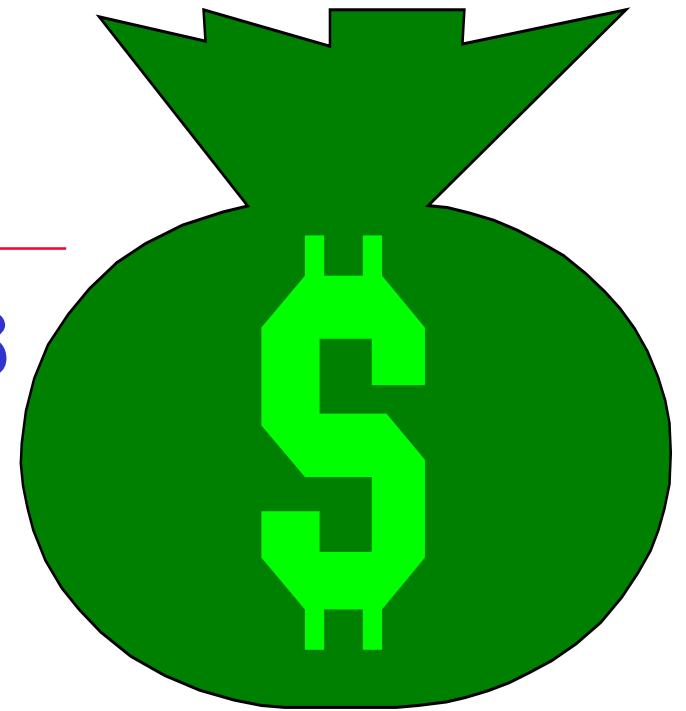
# *Total Annual Cost Savings:*

Processing Savings = \$97,778

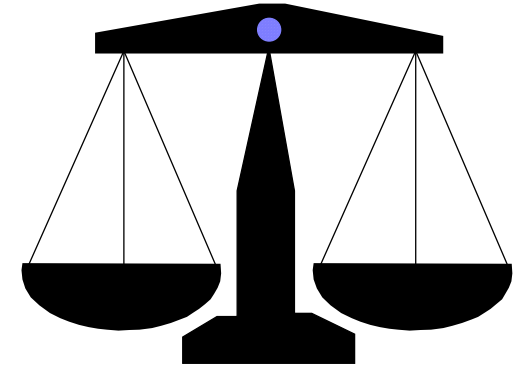
Stock-Out Savings = \$13,635

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Total Savings = \$111,413



## *Comparative Databases:*



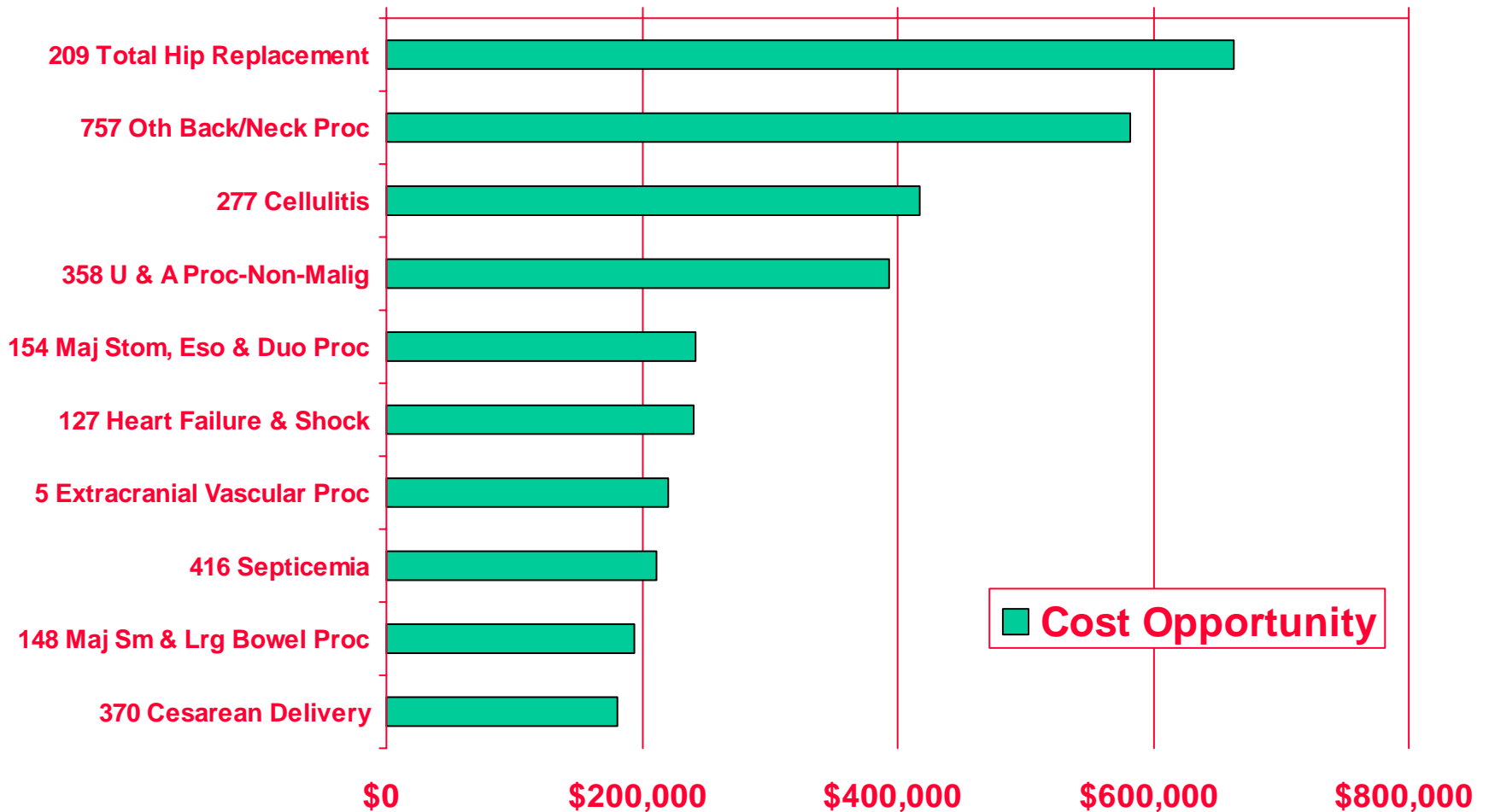
- Operations Outlook - Labor Productivity and Financial Performance (dept. level)
- Perspective Plus - cost, outcome, and resource utilization (procedure level)
- Market Vantage - clinical and financial performance measure used in market share studies and contract negotiation

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|                      |                           |               | 1998 Quarter 1         |             |                   |                     |           |            |                |
|----------------------|---------------------------|---------------|------------------------|-------------|-------------------|---------------------|-----------|------------|----------------|
| Compare Department   | Compare Volume            | My Peer Group | Average Monthly Volume | Worked FTEs | Total Pd Hrs/Unit | Total Wrkd Hrs/Unit | Benefit % | Overtime % | Labor Exp/Unit |
| Emergency Department | Emergency Services Visits | 184           | 3,884                  | 66.74       | 3.31              | 2.94                | 11.2%     | 3.7%       | 41.3           |
|                      |                           | 185           | 2,469                  | 48.61       | 3.54              | 3.37                | 4.9%      | 5.2%       | 61.8           |
|                      |                           | 201           | 3,757                  | 38.80       | 1.94              | 1.77                | 9.2%      | 5.1%       | 36.6           |
|                      |                           | 210           | 1,196                  | 17.07       | 2.58              | 2.44                | 5.4%      | 8.7%       | 37.5           |
|                      |                           | 226           | 3,519                  | 45.99       | 2.49              | 2.23                | 10.2%     | 3.3%       | 59.5           |
|                      |                           | 227           | 3,575                  | 24.13       | 1.23              | 1.15                | 6.5%      | 1.0%       | 23.1           |
|                      |                           | 229           | 1,125                  | 13.23       | 2.17              | 2.01                | 7.3%      | 3.2%       | 40.7           |
|                      |                           | 247           | 1,785                  | 27.12       | 2.82              | 2.60                | 7.9%      | 4.5%       | 63.8           |
|                      |                           | 252           | 3,402                  | 37.67       | 2.10              | 1.89                | 9.9%      | 2.2%       | 40.3           |
|                      |                           | 254           | 1,028                  | 12.49       | 2.23              | 2.08                | 6.8%      | 5.7%       | 43.9           |
|                      |                           | 267           | 4,652                  | 75.99       | 3.09              | 2.79                | 9.6%      | 4.2%       | 53.1           |
|                      |                           | 270           | 1,209                  | 13.98       | 2.15              | 1.98                | 8.0%      | 1.3%       | 34.7           |
|                      |                           | 291           | 1,952                  | 36.29       | 3.54              | 3.18                | 10.1%     | 5.4%       | 85.2           |
|                      |                           | 293           | 3,111                  | 49.41       | 3.05              | 2.71                | 11.0%     | 6.5%       | 71.1           |
|                      |                           | 294           | 2,728                  | 30.37       | 2.10              | 1.90                | 9.3%      | 2.1%       | 46.2           |
|                      |                           | 297           | 979                    | 22.70       | 4.69              | 3.96                | 15.4%     | 5.7%       | 97.8           |
|                      |                           | 307           | 2,102                  | 24.27       | 2.24              | 1.97                | 11.7%     | 0.9%       | 39.0           |
| 314                  | 5,997                     | 99.57         | 3.20                   | 2.84        | 11.3%             | 4.4%                | 66.9      |            |                |
| 324                  | 3,001                     | 42.03         | 2.54                   | 2.39        | 5.7%              | 1.8%                | 66.4      |            |                |
| 329                  | 2,419                     | 31.67         | 2.40                   | 2.24        | 6.7%              | 5.3%                | 106.1     |            |                |

# Top 10 Opportunity APR-DRGs


## Total Cost As Compared to Peer Group per APR-DRG



## *Advantages with Premier:*

- Largest alliance of not-for-profit healthcare organizations (1/3 of all hospitals)
- No isolation - great opportunity to network with peers facing similar problems
- Numerous career opportunities - CBME, Fee-for-service, Simulation, Management
- Few geographic restrictions - contracts with hospitals all across nation

# PREMIER

A red paw print logo is positioned above the letter 'M' in the word 'PREMIER'.

Visit our web site at:  
[www.premierinc.com](http://www.premierinc.com)

On Campus: Monday, November 1st!