Benchmarking Hospital Facility Costs

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Introduction

• PhD Construction Management – Arizona State University
• MS Real Estate – Florida International University
• BS Facilities Management – Brigham Young University
• Professor at Washington State University with research program focused on healthcare facility operations
• 15+ years industry experience leading national and multinational facility, construction, and real estate programs in healthcare, defense, technology, and manufacturing

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A Focus on Healthcare

One of the LARGEST industries in US

- ~4 trillion annual total spending
- ~$40 billion annual construction spending

One of the FASTEST growing job industries in US

- 15% job growth projected through 2029
  - 2.4 million new jobs

Centers for Medicare & Medicaid Services. National Health Expenditure Accounts 2017 Highlights
• What concerns are keeping hospital administrators up at night?
Hospital CEOs Top Concerns

1. Changing Medicaid reimbursement
2. Transition to value-base care
3. Improving margins
4. Recruiting and retaining competent leaders

(Deloitte 2017 survey of US health system CEOs)
“Improving” Profit Margin

= \left( \frac{\text{Operating Income}}{\text{Revenue}} \right) \times 100

Revenue:
- income generated from sales of services

Operating Income
- revenue less COGS and (OpEx)

1. Increase sales

2. Decrease operating expenses (Opex)
Result

• Healthcare facility leaders are feeling pressure to reduce facility operating expenses while still maintaining facility program performance
Facility Cost Center

• Facility expenses a primary target for cost reduction
  – A large cost center for hospitals
  – Typically not revenue generating

• Plant
• EVS
• Laundry/Linen
• Dietary
• Safety/Security
• Transportation
• Biomedical Engineering...
How can healthcare facility leaders effectively manage increasing pressure to “do more with less”?
Making the Business Case:
(To receive adequate resources to deliver on expectations)

• Qualitative - tell the story of how “Facilities” impacts the quality of the healthcare experience for patients and staff

  Examples:

  • Funds spent on landscaping maintenance for the hospital entrance (“curb appeal”) improve patient satisfaction/loyalty
  • Funds spent on staff training improve employee satisfaction/retention
Making the Business Case:
(To receive adequate resources to deliver on expectations)

• Quantitative – tell the story of how “Facilities” impacts the finances of the healthcare business

Managing facilities is a cost of doing business
  • Measure work demand from corrective + preventative hours via CMMS
    • Calculate risk (loss or revenue) if demand (budgets) not met
      • Downtime
      • Deferred maintenance

❖ Benchmarking (starting point: quick/easy)
Benchmarking Steps

1. Develop and measure internal processes and standards
   – Internal benchmarking
     – Examples:
       – Accounting system breaks out costs by facility
       – Comparable job descriptions

2. Compare processes and standards to peers
   – External benchmarking

3. Identify performance gaps
   ✤ Budget justification or forecasting

4. Initiate and manage performance improvements
Even though most healthcare FMIs recognize value:

Few hospitals benchmarks their facility operating expenses and/or staffing levels

Or

– Only benchmark internally

Why?
Existing benchmarks are dated, difficult to interpret, and/or not comprehensive

- O&M Benchmarks for Health Care Facilities (IFMA/ASHE, 2010)
  - Data 12+ years old
  - Only metrics are GSF and “adjusted patient days”:
    - Adjusted patient days is calculated by dividing total charges by inpatient charges, then multiplying by the number of inpatient days and admissions. \((\frac{\text{Gross Revenue}}{\text{Inpatient Revenue}}) \times \text{Inpatient Patient Days} = \text{Adjusted Patient Days}\)
  - No facility salary/compensation data

- IBM Action OI
(FYI...New Benchmark)

- IFMA (2020) O&M Healthcare Benchmark Report
Benchmarking Limitations

• Peer comparison equivalence
  – i.e. rural system to urban system; office building to hospital

• Ratio metric comparison equivalence
  – i.e. different measurement standards for building area

• Limited insight into factors contributing to peer performance
  – i.e. outsourcing trades to reduce facility headcount
  – i.e. facilities staff performing construction

• “Best practices” invalid if overall industry facing similar challenges
  – i.e. staff levels during skilled workforce shortage

• Self reporting
• Example:
  – Electricity expense per GSF
  – **On average**, hospitals spend ~$2.00 on electricity for every 1 GSF (2:1)
  – **Perfect correlation** would be if **every** hospital spent $2.00 per 1 GSF, but there are **other factors** that affect a hospital’s electricity expense:
    – location
    – infrastructure age
    – medical equipment/services
    – climate...
Is there a better metric, other than GSF, to determine Facility expenses that “holds it ratio” irrespective of other factor
Correlation ("holding its ratio")

**Positive correlation**
- The points lie close to a straight line, which has a positive gradient.
- This shows that as one variable increases, the other increases.

**Negative correlation**
- The points lie close to a straight line, which has a negative gradient.
- This shows that as one variable increases, the other decreases.

**No correlation**
- There is no pattern to the points.
- This shows that there is no connection between the two variables.
Correlation Strength

Correlation Coefficient
Shows Strength & Direction of Correlation

-1.0  -0.5  0.0  +0.5  +1.0

Strong  Weak  Weak  Strong

Negative Correlation  Zero  Positive Correlation

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Research Methodology

• Review information provided by each state’s Department of Health
  – Utilization Reports
  – Financial Statements
Common Healthcare Metrics

• Utilization
  – Admissions
  – Discharges
  – Available and Licensed Beds
  – Patient Days
  – Gross Square Feet (GSF)

• Financial (balance sheet)
  – Plant, Property, & Equipment (PP&E)
Common Healthcare Utilization Metrics

Percent of States Reporting by Utilization Metric

- Available Beds: 24%
- Patient Days: 22%
- Licensed Beds: 20%
- Discharges: 18%
- Admission: 14%
- PP&E: 14%
- GSF: 1%

Limited reporting of GSF
Finding “Best” Metric for Facility Costs

• Looking at available hospital metrics AND hospital cost information:

1. Verify if GSF is a sound metric for hospital facility benchmarking
2. Explore strength of other metrics for hospital facility benchmarking
3. Breaking out by “large” and “small” hospitals
## Correlation Coefficients – Large Hospitals

<table>
<thead>
<tr>
<th>Cost account</th>
<th>Available beds</th>
<th>Patient days</th>
<th>Admissions</th>
<th>GSF</th>
<th>PP&amp;E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total plant operating expense</td>
<td>.777</td>
<td>.791</td>
<td>.758</td>
<td>.788</td>
<td>.829</td>
</tr>
<tr>
<td>Maintenance</td>
<td>.628</td>
<td>.656</td>
<td>.574</td>
<td>.456</td>
<td>.563</td>
</tr>
<tr>
<td>Utilities</td>
<td>.685</td>
<td>.736</td>
<td>.674</td>
<td>.849</td>
<td>.864</td>
</tr>
<tr>
<td>Salary, wages, and benefits</td>
<td>.699</td>
<td>.726</td>
<td>.636</td>
<td>.626</td>
<td>.850</td>
</tr>
<tr>
<td>Depreciation</td>
<td>.689</td>
<td>.522</td>
<td>.632</td>
<td>.725</td>
<td>.622</td>
</tr>
<tr>
<td>Other</td>
<td>.662</td>
<td>.700</td>
<td>.712</td>
<td>.494</td>
<td>.516</td>
</tr>
<tr>
<td>Total housekeeping operating expense</td>
<td>.868</td>
<td>.907</td>
<td>.837</td>
<td>.849</td>
<td>.831</td>
</tr>
<tr>
<td>Salary, wages, and benefits</td>
<td>.842</td>
<td>.870</td>
<td>.807</td>
<td>.772</td>
<td>.726</td>
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<tr>
<td>Supplies</td>
<td>.285</td>
<td>.325</td>
<td>.251</td>
<td>.323</td>
<td>.706</td>
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<tr>
<td>Other</td>
<td>.267</td>
<td>.283</td>
<td>.277</td>
<td>.431</td>
<td>.354</td>
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## Correlation Coefficients – Small Hospitals

<table>
<thead>
<tr>
<th>Cost account</th>
<th>Available beds</th>
<th>Patient days</th>
<th>Admissions</th>
<th>GSF</th>
<th>PP&amp;E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total plant operating expense</td>
<td>.411</td>
<td>.242</td>
<td>.720</td>
<td>.430</td>
<td>.634</td>
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<tr>
<td>Maintenance</td>
<td>.399</td>
<td>.215</td>
<td>.669</td>
<td>.360</td>
<td>.562</td>
</tr>
<tr>
<td>Utilities</td>
<td>.285</td>
<td>.148</td>
<td>.468</td>
<td>.744</td>
<td>.546</td>
</tr>
<tr>
<td>Salary, wages, and benefits</td>
<td>.274</td>
<td>.128</td>
<td>.651</td>
<td>.456</td>
<td>.662</td>
</tr>
<tr>
<td>Depreciation</td>
<td>.405</td>
<td>.383</td>
<td>.546</td>
<td>-.200</td>
<td>-.020</td>
</tr>
<tr>
<td>Other</td>
<td>.414</td>
<td>.335</td>
<td>.670</td>
<td>.314</td>
<td>.641</td>
</tr>
<tr>
<td>Total housekeeping operating expense</td>
<td>.552</td>
<td>.382</td>
<td>.711</td>
<td>.666</td>
<td>.635</td>
</tr>
<tr>
<td>Salary, wages, and benefits</td>
<td>.392</td>
<td>.215</td>
<td>.605</td>
<td>.724</td>
<td>.604</td>
</tr>
<tr>
<td>Supplies</td>
<td>.435</td>
<td>.334</td>
<td>.485</td>
<td>.393</td>
<td>.661</td>
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<tr>
<td>Other</td>
<td>.393</td>
<td>.477</td>
<td>.383</td>
<td>-.071</td>
<td>-.049</td>
</tr>
</tbody>
</table>
GSF is an unreliable metric for hospital facility cost benchmarking in small hospitals

Best Metric for Facility Cost Benchmarking:
1. Plant, Property, and Equipment (PP&E)
2. Admissions
### RATIO BENCHMARKS

<table>
<thead>
<tr>
<th>Plant cost account</th>
<th>Ratio for operating expense to metric</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Plant, property, and equipment</td>
</tr>
<tr>
<td>Total OpEx</td>
<td>$0.036*</td>
</tr>
</tbody>
</table>

“Total Opex” roll-up costs =
- Purchased Services
- Utilities
- Compensation (salaries, wages, benefits)
- Depreciation

* Strong correlation \((r > .5)\).
Using the Ratio Model (Operations)

• JUSTIFYING existing Facility Opex

Example:
• For every $1 of PP&E, the average medical center spends $0.036 on plant operations
Using the Ratio Model (PDC - Capital)

• PREDICTING future Facility Opex based on *planned construction*
  – Balance sheet = “Construction Work in Progress (CWIP)” is just PP&E “not yet in service”

Example:
  – For every $1 of capital “value engineered” you save $0.036 on plant operating expenses ANNUALLY
• Compare a facility expense account from your hospital/medical centers to the ratio model:
  1. Find a utilization/financial metric from your hospital
  2. Multiply it by the applicable ratio
  3. Compare the calculation to your hospital’s actual cost

• How close is the benchmark to your hospital’s actual cost?
How can healthcare facility leaders effectively manage increasing pressure to “do more with less”?

Step 1 = Benchmark!!!
Next Steps

1. Gather existing facility costs
2. Compare to Benchmark
   1. Justifying existing budget
   2. Identify gaps
3. Use data to support budget funding increases

» Benchmarking is a quick/easy way to the provide “evidence”
Thank you

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